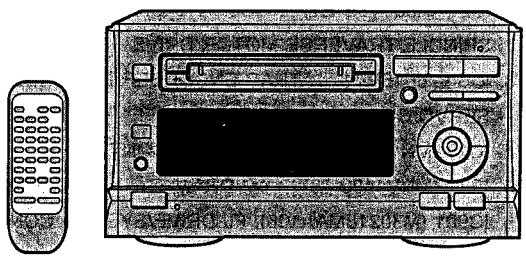
ORDER No.AD9907180C2

Service Manual

Mini Disc Deck



SJ-HD501

Mechanism unit: MR3A (RAJ3402)
Mechanism Series

Colour

(N).....Gold Type

Areas

EG.....Europe.

EB.....Great Britain.

This product is option for systems of SC-HD301 and SC-HD501.

Specifications

●System	Minidisc digital audio system
Recording	Magnetic field modulation direct overwrite
Reading	Non-contact optical system with Semiconductor laser (=780nm)
Sampling frequency:	44.1 kHz
Cording system:	ATRAC
Channel:	2channel, stereo
Frequency response:	10-20000Hz (±0.3dB)
S/N Ratio (PLAY):	90dB
Wow and flutter:	Below measurable limit

●Input

Analog input (Level/impedance):	500mV/47kΩ
Digital input (Optical in 1, Optical in 2) Wavelength:	660nm

●Output

Analog output (Level/impedance):	2.0V/600Ω

●General

Dimensions (WxHxD):	196x104x237mm
Weight:	2.0kg
Power supply:	AC230-240V, 50Hz
Power consumption:	12W

Notes:

1.Design and specifications are subject to change without notice.

2.Dimensions and weight are approximate.

3.Total harmonic distortion is measured by the digital spectrum analyzer.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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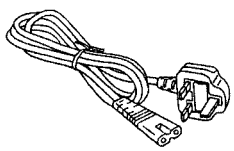
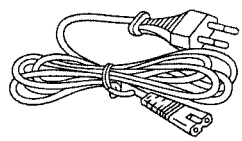
1 Accessories

• AC power supply cord.....1pc.

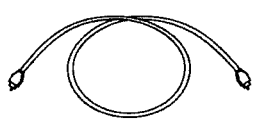
For (EB) area:
(RJA0044-C)



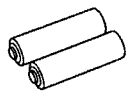
For (EG) area:
(RJA0043-C)



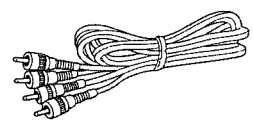
• Optical cable.....1pc.
(RJL1X001B05D)

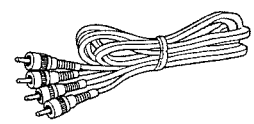


• Remote control batteries.....2pcs.
[R6/LR6 (AA, UM-3)]
Note:These are available on sales route.

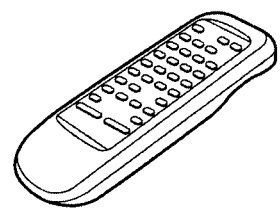


• Stereo phono cables.....2pcs.
(RJL2P004B08)





• Remote control transmitter.....1pc.
(EUR645272)



2 Precation of Laser Diode

CAUTION:

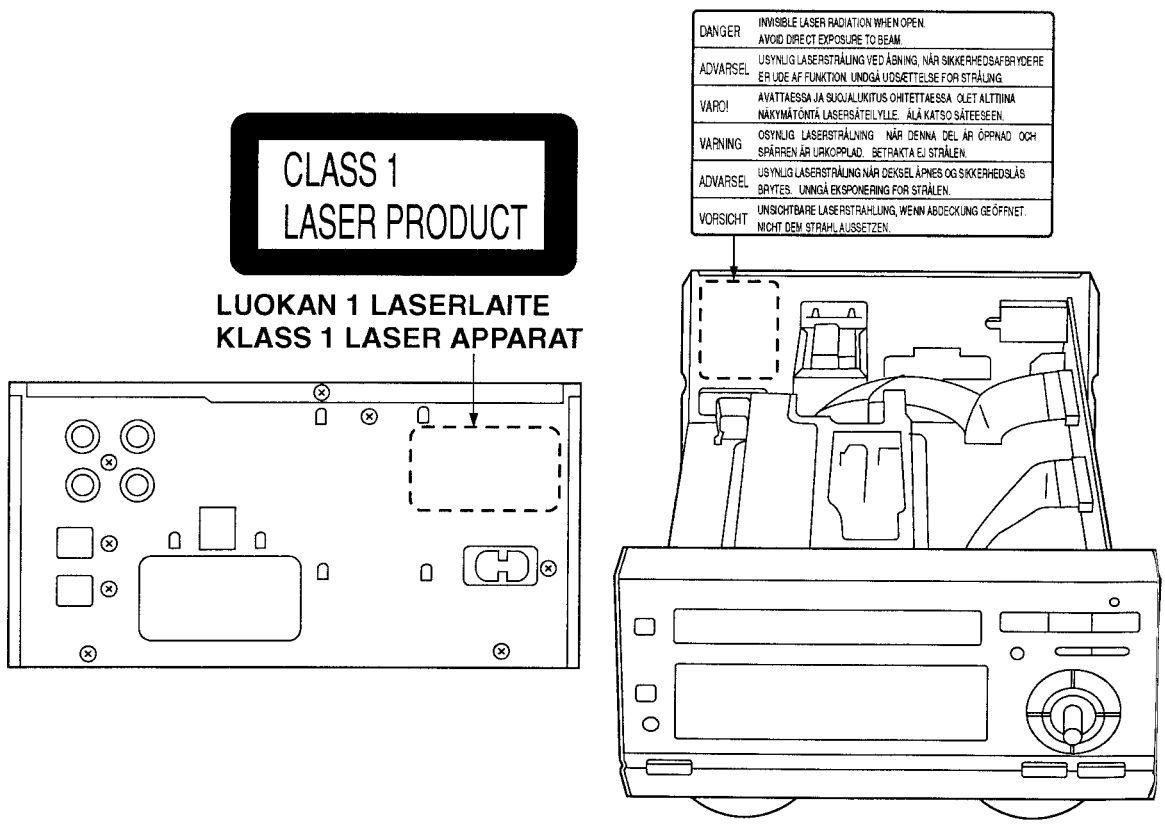
This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted fromthe pickup lens.
Wave length:780 nm
Maximum output radiation power from pickup: 100 μ W/VDE
Laser radiation from the pickup lens is safety level,but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjsuted.
3. Do not look at the focus lens using optical insturments.
4. Recommend no to look at pickup lens for a long time.

ACHTUNG:

Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der
Laserinheit adgestrahit.
Wellenlänge: 780 nm
Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE
Die Strahlungan der Lasereinheit ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinhit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlines blicken.


CLASS 1
LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT
DANGER
INVISIBLE LASER RADIATION WHEN OPEN.
AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVARSEL
USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT
UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.

CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

3 Caution for AC Main Lead

(For United Kingdom)

("EB" area code model only)

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark ⓐ or the BSI mark ⓚ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local dealer.

CAUTION!
IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:
Blue: Neutral, Brown: Live.
As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.
The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL ⏚ OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOFóKEEP DRY.

Before use

Remove the connector cover.

How to replace the fuse

The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below.
Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.

Figure A

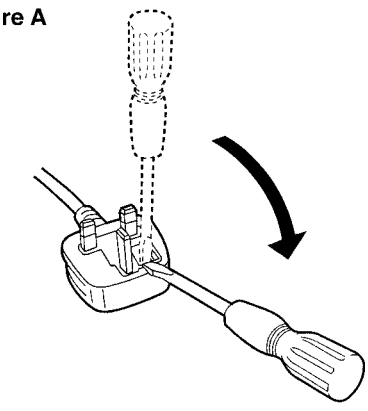
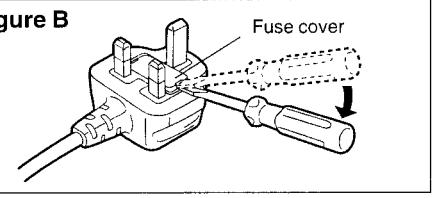


Figure B



2. Replace the fuse and close or attach the fuse cover.

Figure A

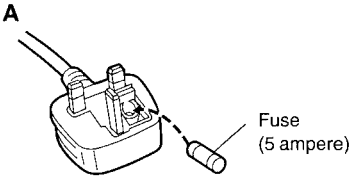
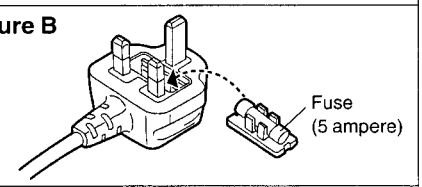
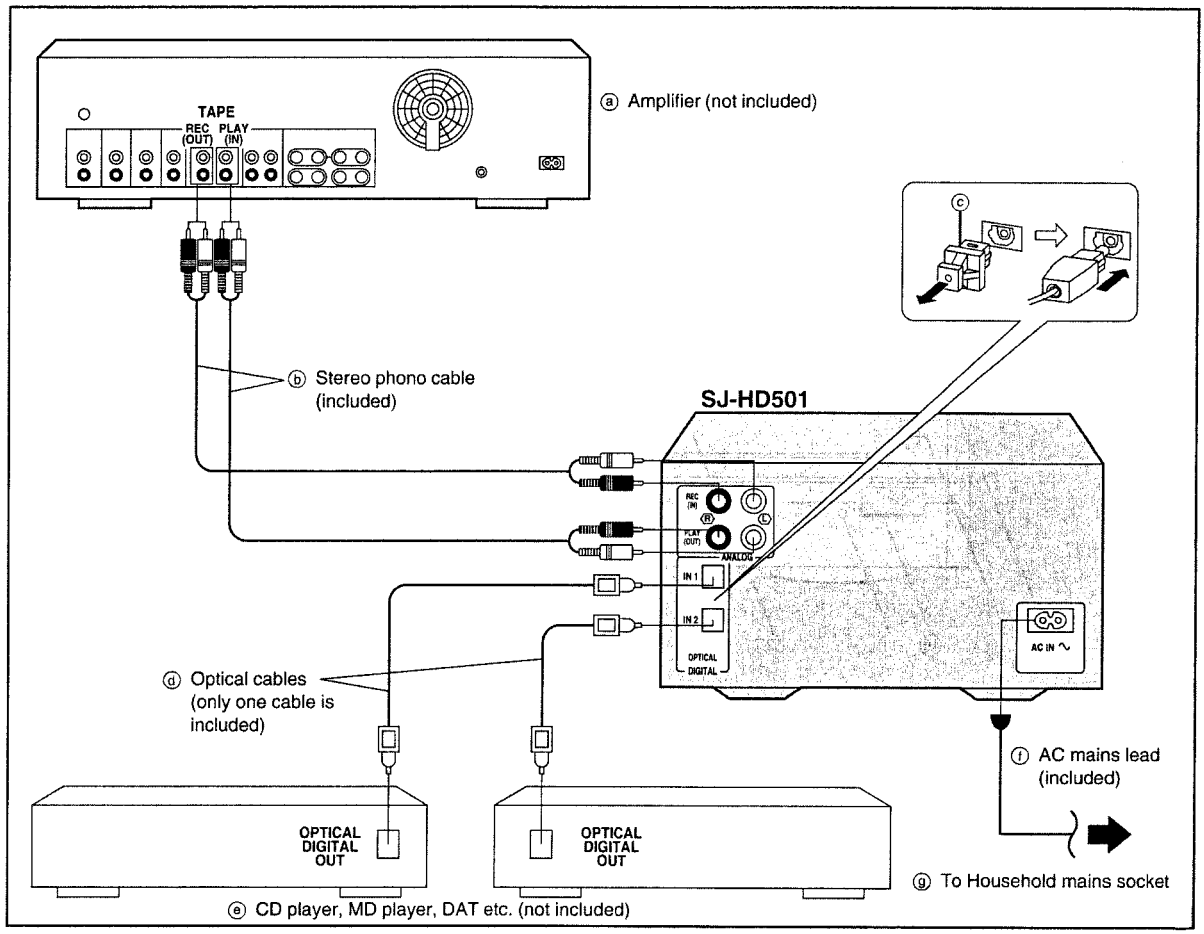


Figure B



4 Operating Instructions

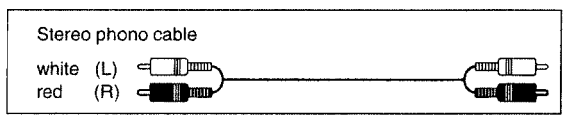
Connections



This example shows the unit connected to an amplifier through the ANALOG IN/OUT terminals, and to digital equipment (CD player, MD player, DAT, etc.) through the DIGITAL OPTICAL IN terminals.
Before making connections, turn off all the components.

ANALOG IN / OUT terminals

Connect the PLAY OUT terminals to PLAY IN terminals on an amplifier to play through speakers connected to the amplifier.
Connect the REC IN terminals to the REC OUT terminals on an amplifier to record sounds from other components connected to the amplifier.



DIGITAL OPTICAL terminals

Remove the dust-protection caps (ⓒ) before connecting the optical cables.
Connect IN 1 and IN 2 to OPTICAL OUT terminals on other playback components for digital recording to this unit.

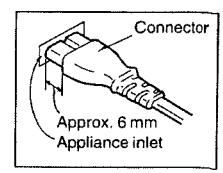
Note
DIGITAL OPTICAL terminals not in use should be covered by a dust protection cap.

FOR UNITED KINGDOM ONLY
BE SURE TO READ THE CAUTION FOR THE AC MAINS LEAD ON PAGE 3 BEFORE CONNECTION.

AC IN connector

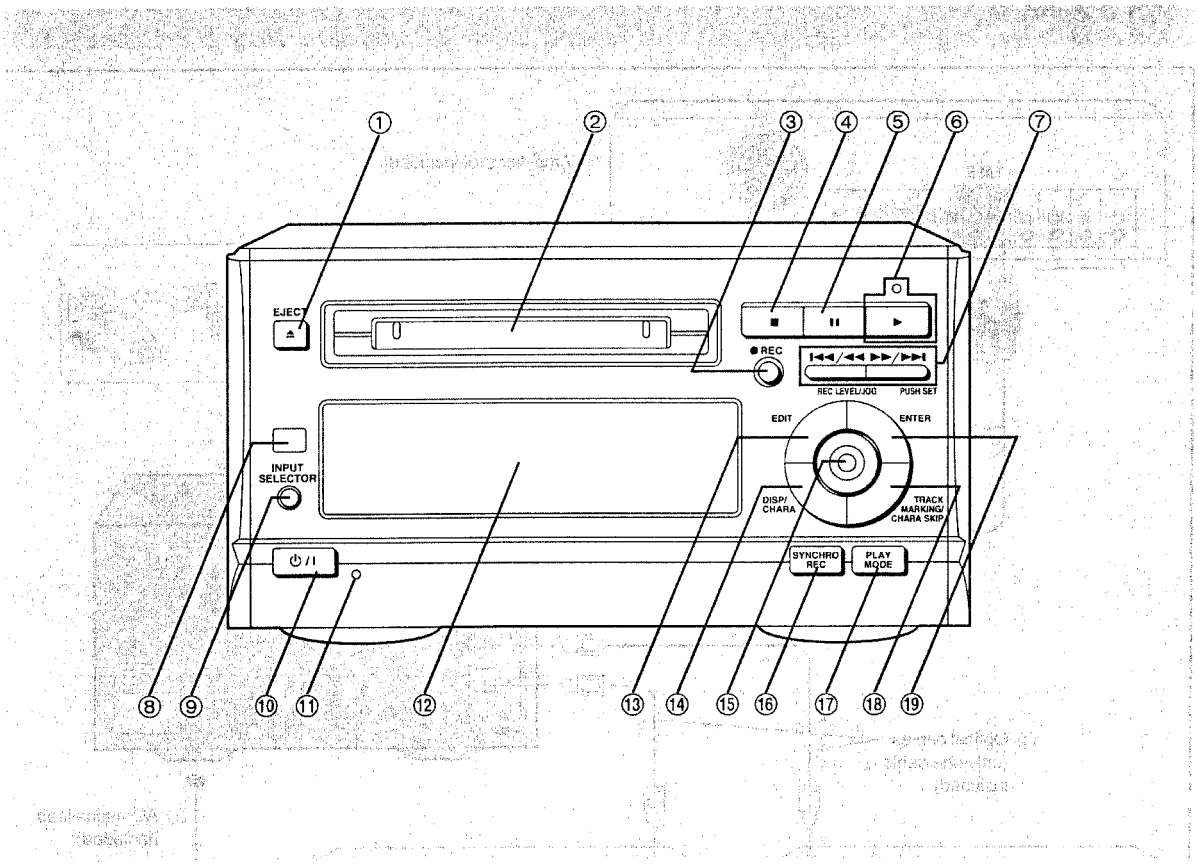
Connect AC mains lead.

Insertion of connector
Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.
However there is no problem using the unit.



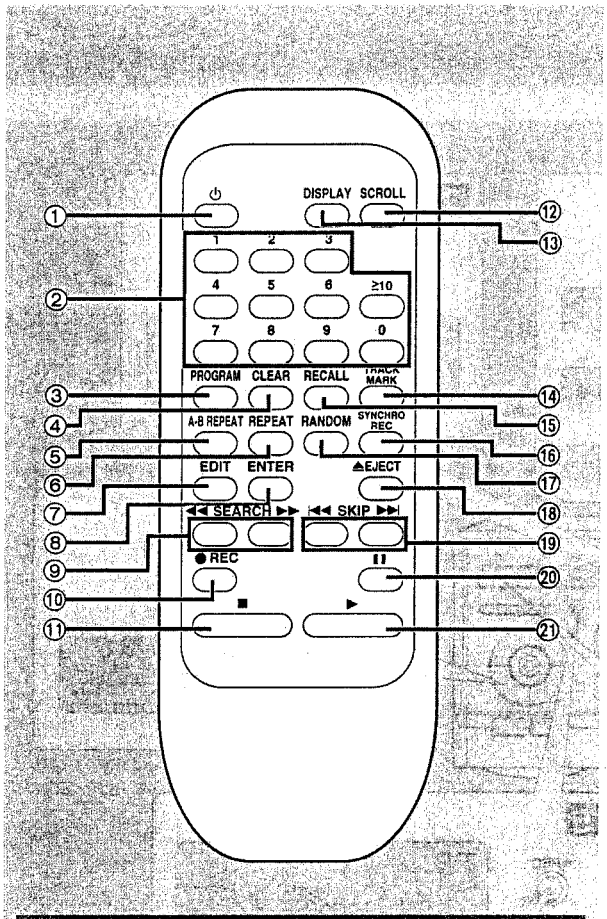
Note
This unit may interfere with radio reception so leave some distance between it and your tuner.

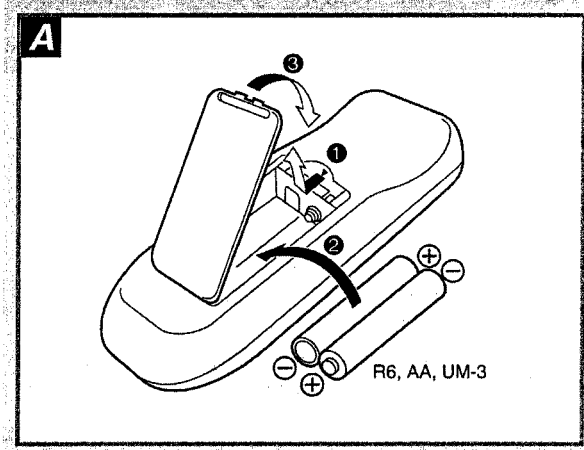
Front panel controls

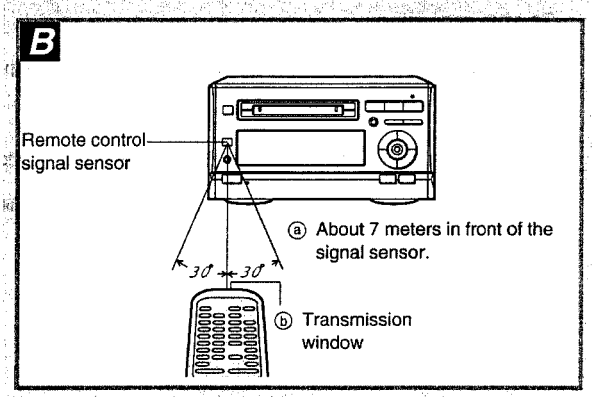


No.	Name
①	**Eject button (⏏ EJECT)**
②	**MD slot**
③	**Record button (● REC)**
④	**Stop button (■)**
⑤	**Pause button (❚❚)**
⑥	**Playback/recording start button and indicator (▶)**
⑦	**Skip/Search buttons (⏮/◀◀, ▶▶/⏭)**
⑧	**Remote control signal sensor**
⑨	**Input selector (INPUT SELECTOR)**
⑩	**Standby/on switch (⏻/I)** Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
⑪	**Standby indicator** When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.

No.	Name
⑫	**Display**
⑬	**Editing mode button (EDIT)**
⑭	**Display mode select/Character select button (DISP/CHARA)**
⑮	**Recording level/JOG control (REC LEVEL/JOG)**
⑯	**Synchro-record button (SYNCHRO REC)**
⑰	**Playback mode selector (PLAY MODE)**
⑱	**Track mark mode select/Character skip button (TRACK MARKING/CHARA SKIP)**
⑲	**Enter button used in editing (ENTER)**







The remote control

No.	Name
①	Standby/on button (⏻)
②	Numeric buttons (1–0, ≥10)
③	Program button (PROGRAM)
④	Program clear button (CLEAR)
⑤	A-B repeat button (A-B REPEAT)
⑥	Repeat button (REPEAT)
⑦	Editing mode button (EDIT)
⑧	Enter button used in editing (ENTER)
⑨	Search buttons (◀◀ SEARCH ▶▶)
⑩	Record button (● REC)
⑪	Stop button (■)
⑫	Scroll button (SCROLL)
⑬	Display select button (DISPLAY)
⑭	Track mark select button (TRACK MARK)
⑮	Recall button (RECALL)
⑯	Synchro-record button (SYNCHRO REC)
⑰	Random play button (RANDOM)
⑱	Eject button (≙ EJECT)
⑲	Skip buttons (|◀◀ SKIP ▶▶|)
⑳	Pause button (II)
㉑	Playback/recording start button (▶)

Battery installation A

Use of batteries

- Observe correct polarity (+ and −) when inserting the batteries.
- Do not mix old and new batteries or different types of batteries.
- Do not recharge ordinary dry cell batteries.
- Do not heat or disassemble the batteries. Do not let the batteries get wet, or expose them to naked flames.
- Remove the batteries if the unit is not to be used for a long time.
- Do not keep together with metallic objects such as necklaces.
- Do not use rechargeable type batteries.

Mishandling of batteries can cause electrolyte leakage which can damage items the fluid contacts and may cause a fire.
If electrolyte leaks from the batteries, consult your dealer.
Wash thoroughly with water if electrolyte comes in contact with any part of your body.

Correct method for use B

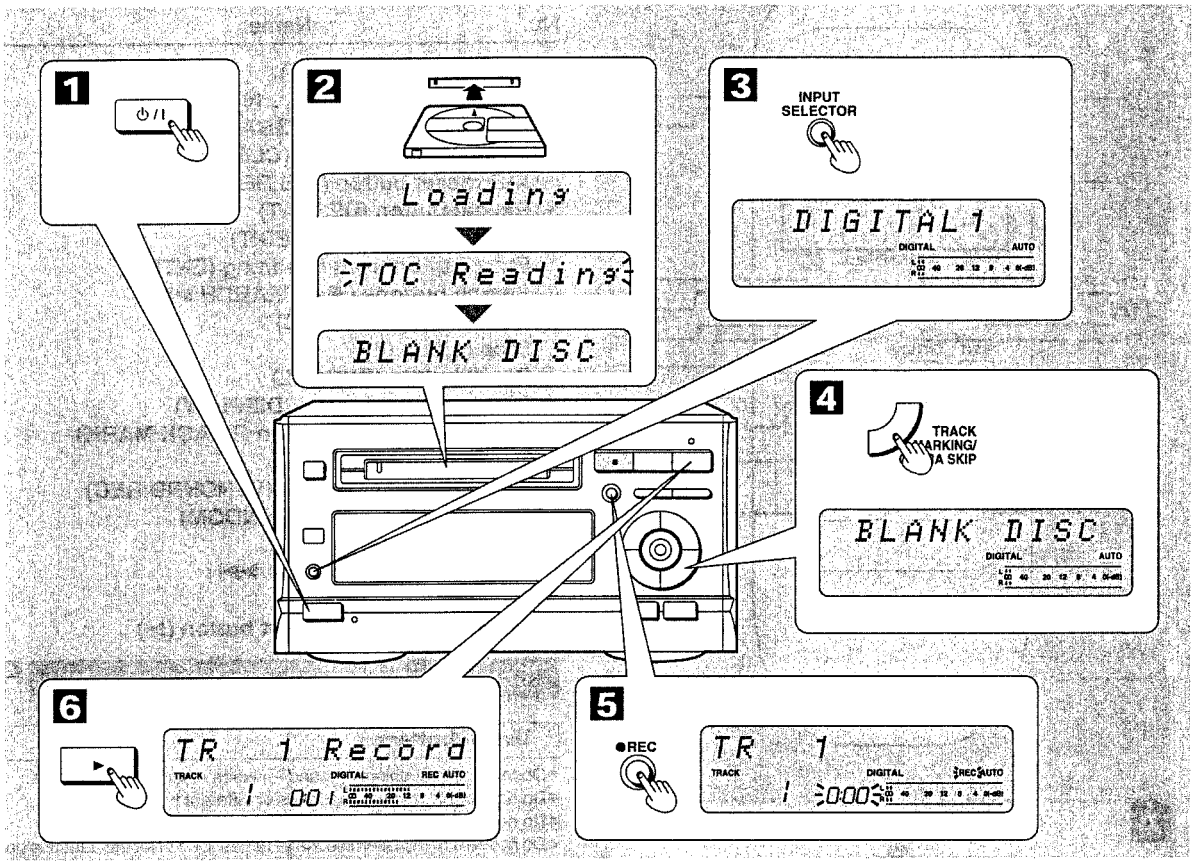
Operation notes

- Do not place obstacles between the remote control signal sensor and remote control unit.
- Do not expose the remote control signal sensor to direct sunlight or to the bright light of a fluorescent light.
- Take care to keep the remote control signal sensor and end of the remote control unit free from dust.
- If this system is installed in a rack with glass doors, the glass doors' thickness or color might make it necessary to use the remote control a shorter distance from the system.

To prevent damage

- Never place heavy items on top of the unit.
- Do not disassemble or reconstruct the unit.
- Do not spill water or other liquids into the unit.

Basic recording operations



If you are using MDs for the first time, refer to the explanations on the back cover for clarification of the terms used.

Before operation

Turn on the unit you are recording from and prepare it for play.

1 Press [⏻/I].

The unit comes on.

2 Insert the MD for recording.

The MD is pulled into the unit after it is pushed in part of the way. The message "TOC Reading" flashes on the display and then any text information about the disc is shown.

3 Select the input terminals to be used with [INPUT SELECTOR].

Each time the button is pressed:

DIGTIAL 1→DIGITAL 2→ANALOG

↑_____↓

DIGITAL 1: When using DIGITAL OPTICAL IN 1 terminal
DIGITAL 2: When using DIGITAL OPTICAL IN 2 terminal
ANALOG: When using ANALOG REC (IN) terminal

The previous display is restored in 3 seconds.

4 Select the marking mode with [TRACK MARKING/CHARA SKIP].

Each time the button is pressed: AUTO←→off

AUTO: Track marks are automatically inserted.
Off: If track marks are unnecessary or when you want to insert them manually.

5 Press [● REC].

The unit goes to recording standby.

If you selected ANALOG in step 3:
Adjust the recording level.

6 Press [▶] to start recording and start play back of the sound source.

To stop recording

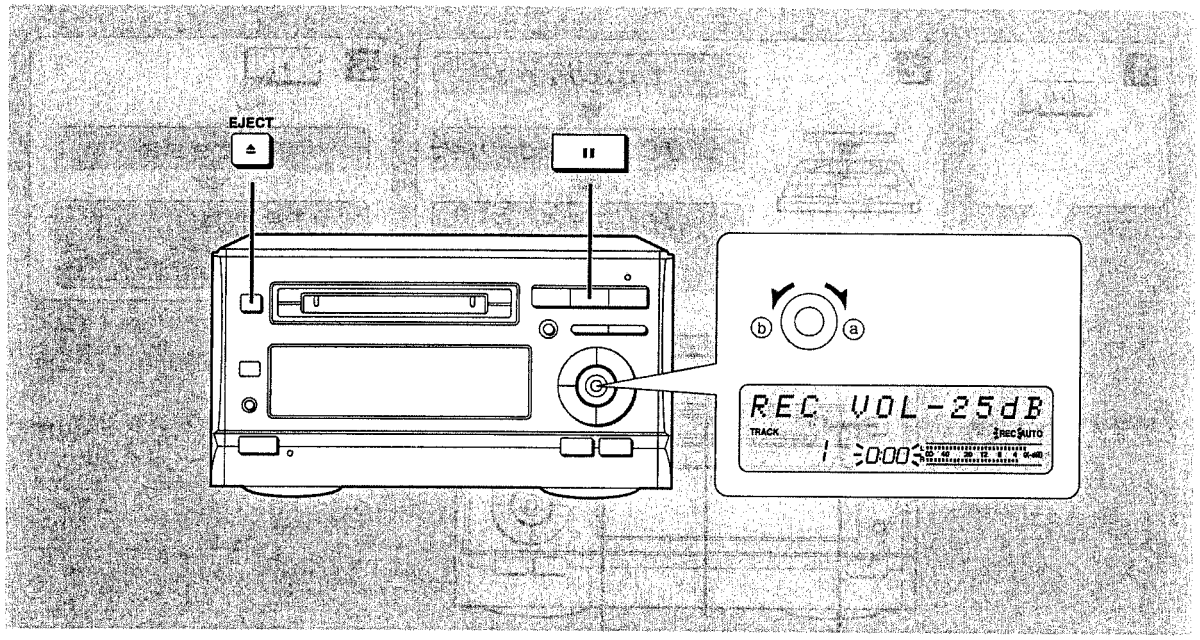
Press [■].

Recording has finished when the message "UTOC Writing" disappears from the display.

Note

- The marking modes and the input source cannot be changed while recording.
- Do not turn the unit off or eject the disc while "UTOC Writing" is still on the display.
  This can cause the recording to be erased and damage the disc.

Basic recording operations



To pause recording

Press [❚❚].
A track mark is added if the marking mode has been set to AUTO.
Press again to resume recording.

To eject the MD

Press [⏏ EJECT].

Note

Recording starts from where the last recording ended so it is not necessary to look for a blank section.
You cannot record over tracks.
If a track is no longer required and you need to make space on the disc, use the editing functions.

Your attention is drawn to the fact that recording pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

Digital recording

Input through DIGITAL 1 or DIGITAL 2 will result in digital recording.
This unit has a sampling rate converter.
This enables you to record sound from satellite and cable tuners (32 kHz and 48 kHz).
The message "DIGITAL IN UNLOCK" is displayed if the source equipment is not connected correctly or it isn't on.
The number of times you can record and re-record digital material is limited.
Recording level adjustments are made automatically.

Auto marking

When set to AUTO, track marks are inserted as they are received from a digital source, or after three seconds of silence during analog recording.

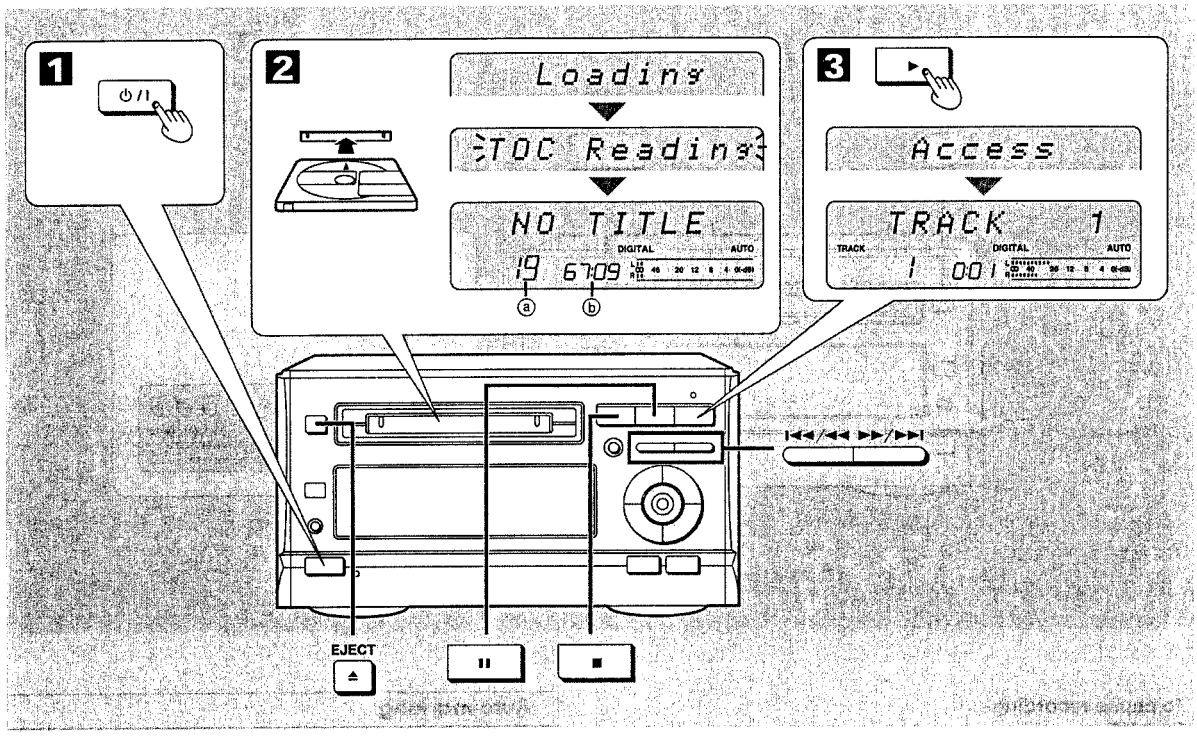
Track marks may not be inserted correctly while analog recording in the following cases:
If the space between tracks is short;
If there is noise between tracks;
If there are parts of the track that play at an extremely low level;
If recording is started partway through a track (the first silent section after recording begins is not registered).
Use the editing functions after recording is finished to correct the track marks.

How to adjust the recording level

Necessary when recording an analog signal

① Playback the source to be recorded.
② Select the right level with [REC LEVEL/JOG].
Set the control so that highest level on the source pushes the peak level meters just up to 0 dB. (A red indicator lights if the level is too high.)
ⓐ The recording level increases
ⓑ The recording level decreases
③ Stop the source.
Now begin recording.

Basic playback operations



If you are using MDs for the first time, refer to the explanations on the back cover for clarification of the terms used.

1 Press [⏻/I].
The unit comes on.

2 Insert the MD.
The MD is pulled into the unit after it is pushed in part of the way. The message "TOC Reading" flashes on the display and then any text information about the disc is shown.
ⓐ Total number of tracks
ⓑ Total play time

3 Press [►].

To stop play
Press [■].

To pause play
Press [II].
Press again to resume play.

To eject the MD
Press [▲ EJECT].

Reference
The unit automatically plays stereo and monaural MDs.

Skipping tracks

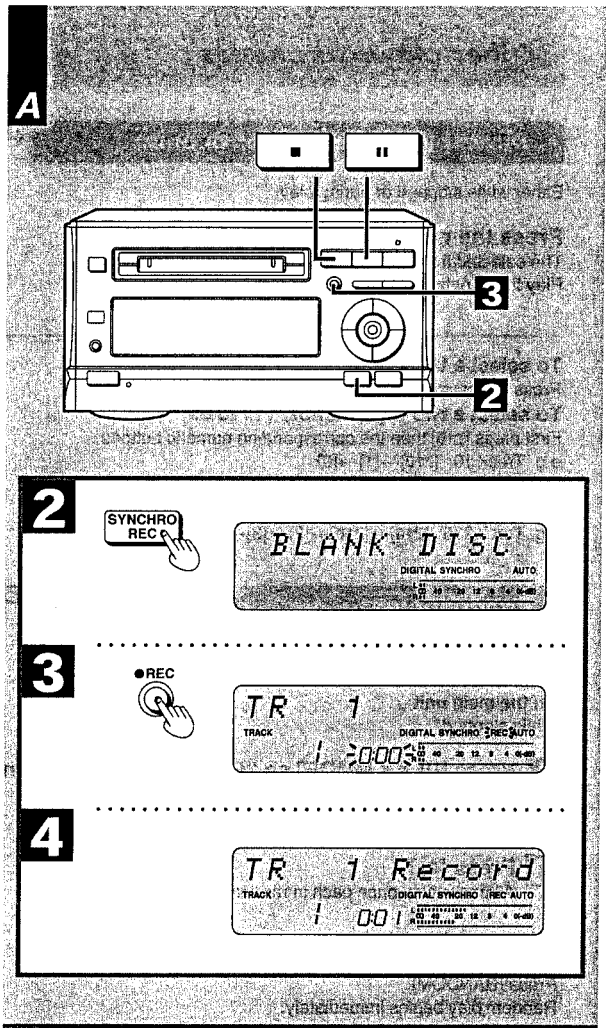
Press the button once for each track to be skipped.

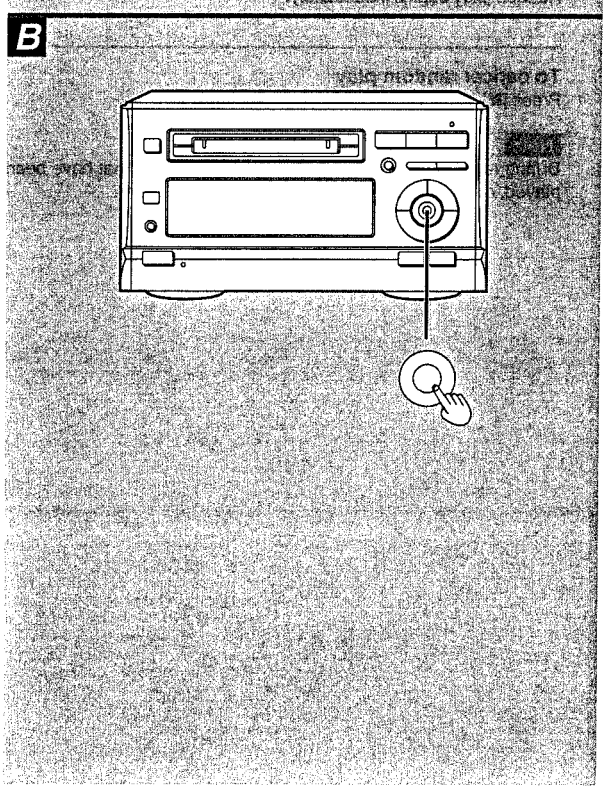
	Backward	Forward
Main unit	I◄◄/◄◄	►►/►►I
Remote control	I◄◄	►►I

Fast forwarding and rewinding

Keep the button pressed during play or pause mode.

	Backward	Forward
Main unit	I◄◄/◄◄	►►/►►I
Remote control	◄◄	►►





Functions to assist recording

Synchronized recording

A

Recording starts as soon as sound input is detected.

1 Insert an MD, select the source and marking modes.
If you have selected analog input, press [● REC], adjust the recording level and press [■].

2 Press [SYNCHRO REC].
"SYNCHRO" appears on the display.

3 Press [● REC].
The unit goes to recording standby.

4 Start playback of the source.
Recording starts as soon as sound is detected.

To stop recording
Press [■].
Recording has finished when the message "UTOC Writing" disappears from the display.

To pause recording
Pause or stop the sound source and this unit pauses after 4 seconds of silence. Recording resumes when the source is started again.
[❚❚] on this unit doesn't work while this function is on.

This unit is paused when playback is finished.
Press [■] to cancel the function.

Note
Recording quality can be affected if a track begins with extremely low volume or if there are almost silent parts during the track.
Do not use this function if the source you are recording contains such tracks.

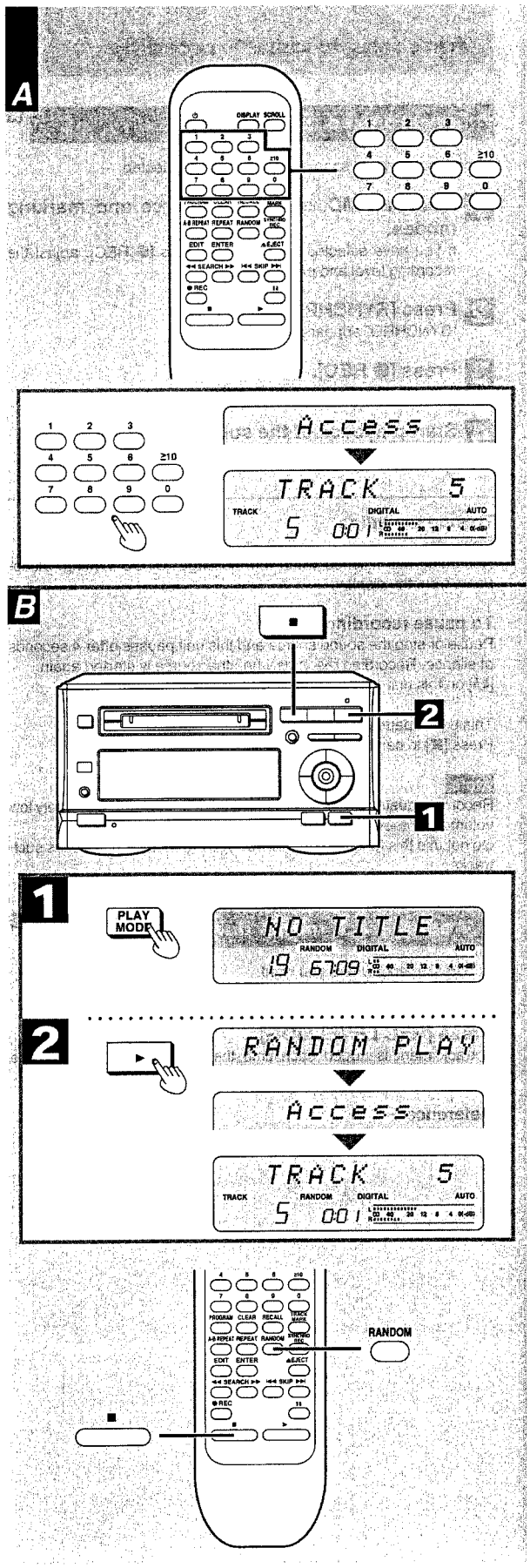
Adding track marks during recording

B

Add track marks where you want.

During recording
Press [REC LEVEL/JOG].
A track mark is added each time the button is pressed and the number of tracks increases.

Reference
Track marks can be added until track 254 is reached.



Other playback modes

Direct play (remote control only) A

Either while stopped or during play.

Press the numeric buttons.
The selected track starts playing.
Play then continues to the final track.

To select a track numbered 1 to 9
Press the corresponding numeric button.
To select a two digit number (10 to 99)
First press [≥10] then the corresponding numeric buttons.
e.g. Track 10: [≥10]→[1]→[0]
To select a three digit number (100 to 254)
First press [≥10] twice then the corresponding numeric buttons.
e.g. Track 235: [≥10]→[≥10]→[2]→[3]→[5]

Random play B

Randomly plays all the tracks on the MD.

On the main unit
While stopped

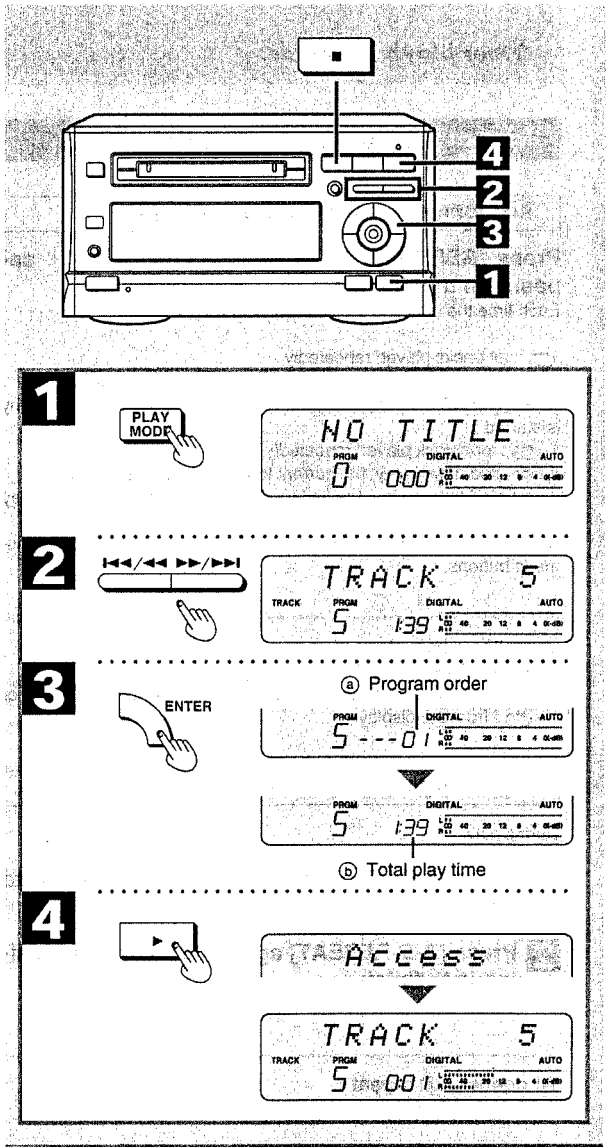
1 Press [PLAY MODE] so "RANDOM" appears on the display.
Each time the button is pressed: PRGM→RANDOM→off

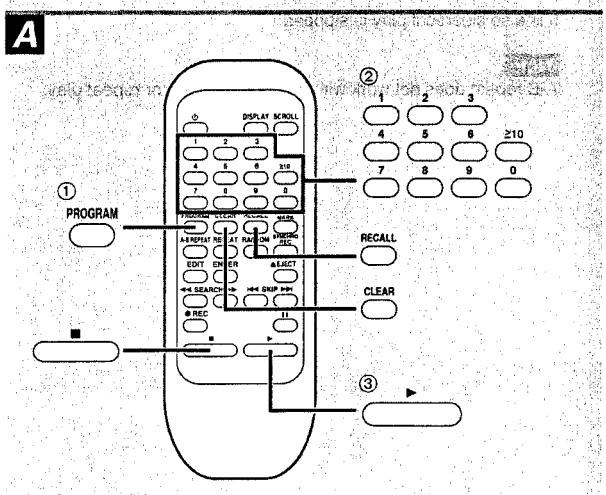
2 Press [▶].
All tracks play once each in random order.

On the remote control
While stopped
Press [RANDOM].
Random play begins immediately.

To cancel random play
Press [■]. (Press twice if the unit is playing.)

Note
During random play, you cannot skip back to tracks that have been played, or search backward or forward between tracks.





Other playback modes

Program play

This function allows you to playback up to 24 tracks in a selected order.

On the main unit
While stopped

1 Press [PLAY MODE] so "PRGM" appears on the display.
Each time the button is pressed: PRGM→RANDOM→off

2 Press [▶▶/▶▶I] or [I◀◀/◀◀] to select the track number.

3 Press [ENTER].
Repeat steps 2 and 3 to program all the required tracks in order.

"FULL" appears on the display when there is no space left in the program.

4 Press [▶].
The selected program begins.

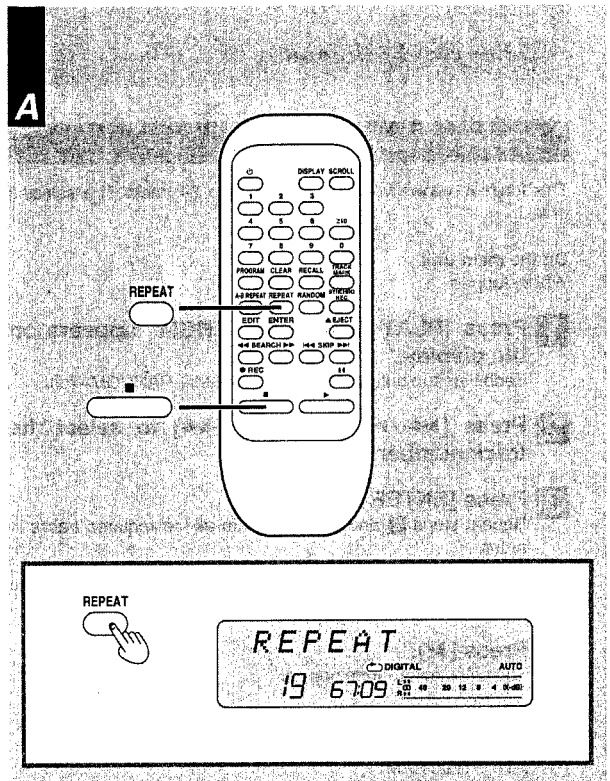
On the remote control A
While stopped
① Press [PROGRAM].
② Select the tracks in the required order with the numeric buttons.
③ Press [▶].

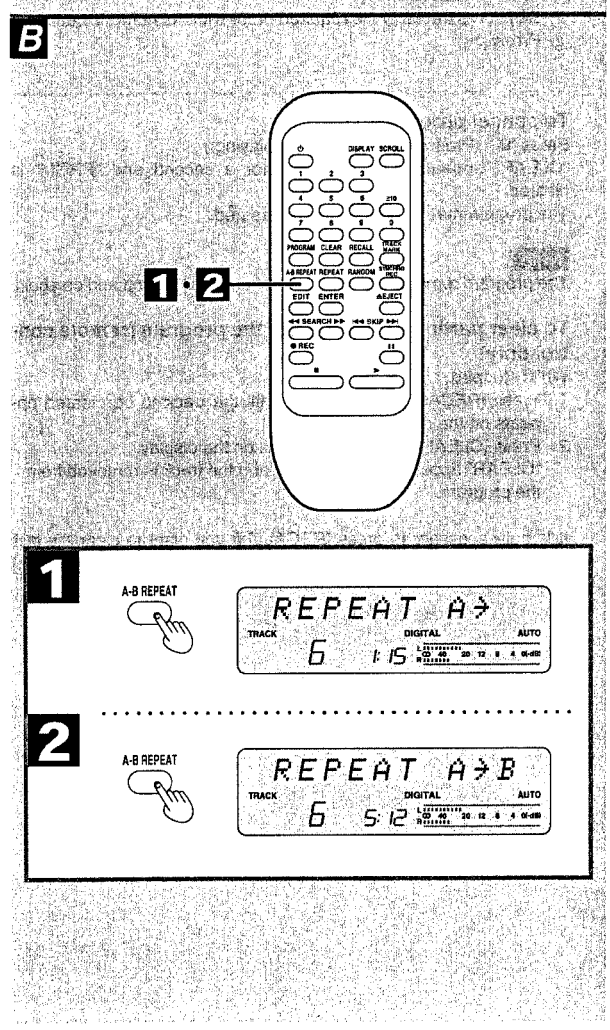
To cancel program play
Press [■]. (Press twice if the unit is playing.)
"CLEAR" appears on the display for a second and "PRGM" is cleared.
The programmed contents are also cleared.

Note
The program remains intact even if the unit is turned off and on again.

To clear particular tracks from the program (remote control only)
While stopped
1. Press [RECALL] successively until the track to be cleared appears on the display.
2. Press [CLEAR] while "RECALL" is on the display.
"CLEAR" appears on the display and the track is removed from the program.

It is not necessary to press [RECALL] if you want to clear the last track from the program. The last track is removed each time [CLEAR] is pressed.





Other playback modes

Repeat play (remote control only)

Repeating one or all of the tracks A

Press [REPEAT] so either " ↻ " or "1- ↻ " appears on the display.

Each time the button is pressed: ↻ →1- ↻ →off

↻ : all tracks played repeatedly
This mode also functions during random and program play.
Press [REPEAT] so " ↻ " appears on the display before or after play is started.

1- ↻ : one track played repeatedly
If activated during play, the current track is played repeatedly.
If activated before play, the first track is played repeatedly after play starts.
Select another track by skipping or selecting it directly with the numeric buttons.

Canceling repeat play

Press [■]. (Press twice if unit is playing.)
The mode is also cleared if [REPEAT] is pressed to clear " ↻ " or "1- ↻ " from the display.

Repeating a particular section—A-B repeat B

During play

1 Press [A-B REPEAT] at the point repeating is to start.

2 Press [A-B REPEAT] again at the point repeating is to finish.

The chosen section plays repeatedly.

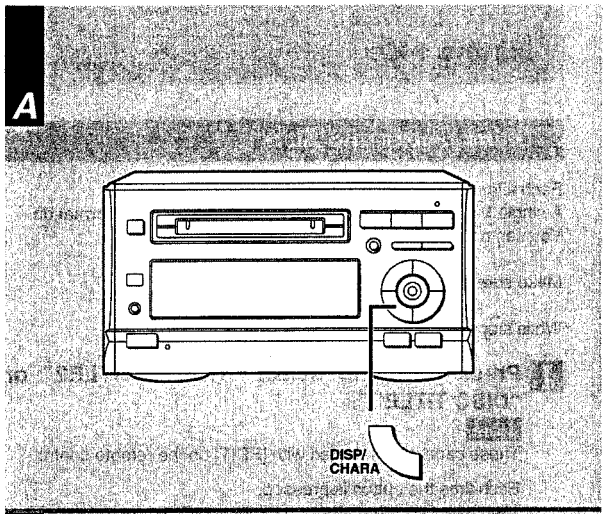
To cancel A-B repeat

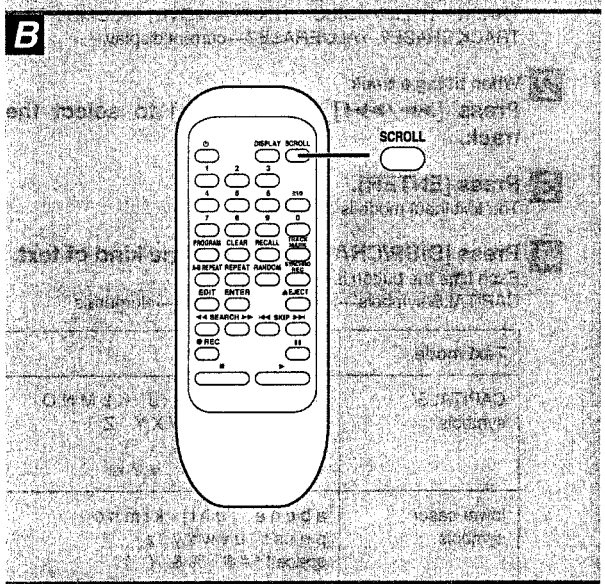
Press [A-B REPEAT].

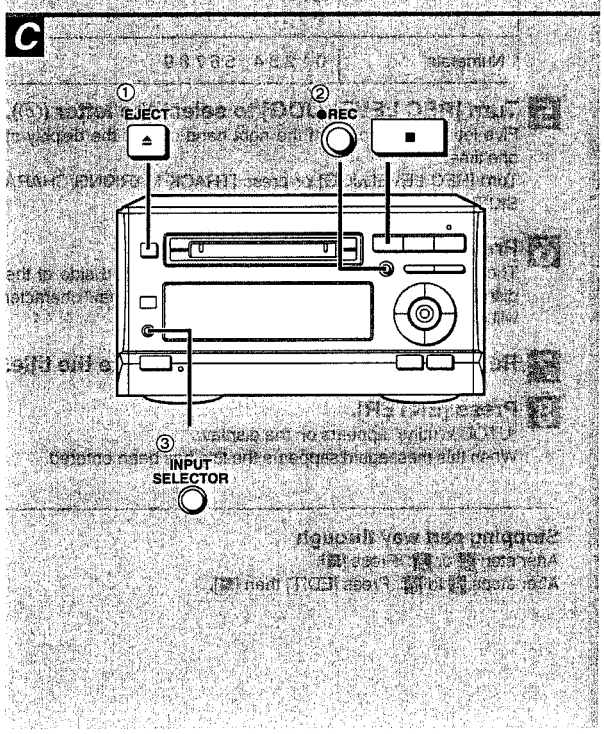
It is also cleared if play is stopped.

Note

A-B repeat does not work with random, program or repeat play.







Convenient functions

Changing the display

A

Press [DISP/CHARA].

Different information appears on the display each time the button is pressed. The information shown depends on the condition of the unit.

Example

During play

① Name of track and elapsed time
② Track number and remaining time

While recording

① Track number and elapsed time for that track
② Remaining time on MD

While stopped

① Title of MD, total number of tracks and total play time of the MD
② Remaining time on MD

Reference

Text over 12 letters long scrolls whenever that display is returned to.

Scrolling the display (remote control only)

B

When the title of a MD or the names of tracks are too long to fit on the display at one time, the unit automatically scrolls that information across the screen once when the information is first accessed.
This operation allows you to see the information in full again.

While the disc title or track name are being displayed.

Press [SCROLL]

The information scrolls from right to left across the display.

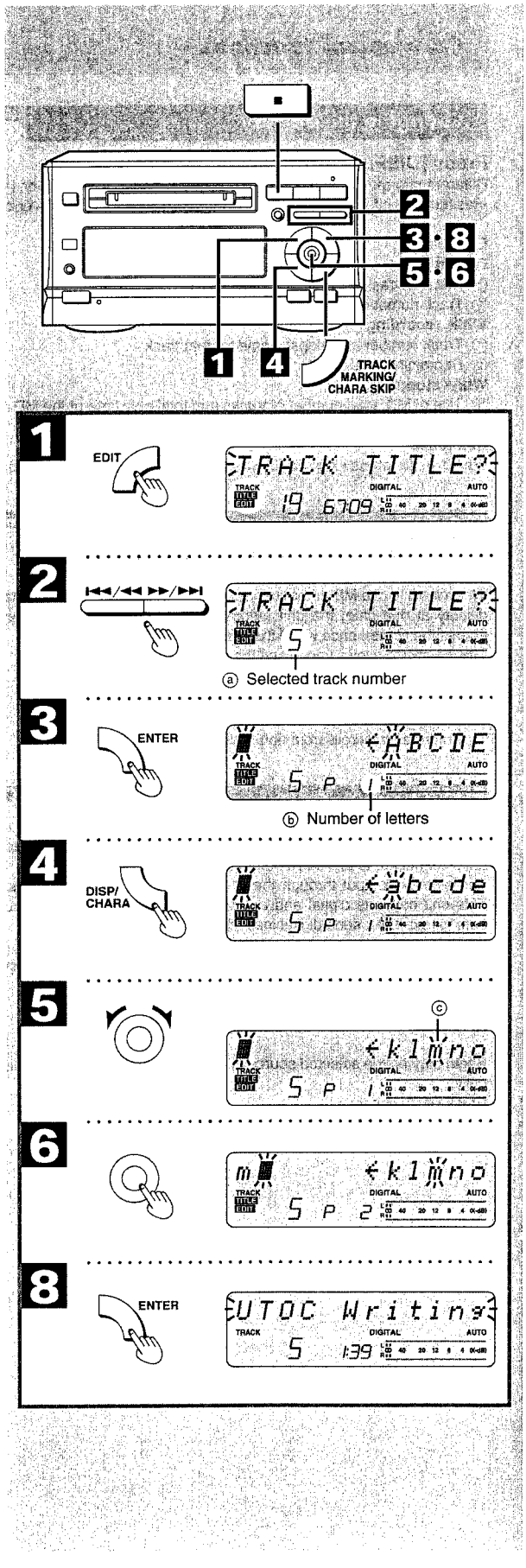
Monitor function

C

Input from units connected to this unit's input terminals can be sent to units connected to this unit's output terminals.
The signal is output through the ANALOG PLAY (OUT) terminals. This unit converts digital and analog signals automatically so you can, for example, send digital input directly to an analog amplifier.

① Press [▲ EJECT] if an MD is in the unit. (This function will not work if an MD is in the unit.)
② Press [● REC]. ("Monitor" appears on the display.)
③ Select the source with [INPUT SELECTOR].

Begin play on the selected source and the sound is output automatically.
Press [■] to cancel.



Editing MDs

Titling tracks and discs

Each title can have up to 100 letters.
A single MD can hold about 1700 letters worth of text information.
You can not add titles to prerecorded MDs.

Make sure the disc is record enabled.

While stopped

1 Press [EDIT] to select "TRACK TITLE?" or "DISC TITLE?".

Note

These cannot be selected with [EDIT] on the remote control.

Each time the button is pressed:
TRACK TITLE?→DISC TITLE?→MOVE?→COMBINE?→
TRACK ERASE?→ALL ERASE?→current display

2 When titling a track
Press [►►/►►I] or [I◄◄/◄◄] to select the track.

3 Press [ENTER].
The text input mode is activated.

4 Press [DISP/CHARA] to select the kind of text.
Each time the button is pressed:
CAPITALS/symbols→lower case/symbols→Numerals

Text mode	Character
CAPITALS/ symbols	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z space ! " # $ % & ' ( ) * + , − . /: ; < = > ? @ _ `
lower case/ symbols	a b c d e f g h i j k l m n o p q r s t u v w x y z space ! " # $ % & ' ( ) * + , − . /: ; < = > ? @ _ `
Numerals	0 1 2 3 4 5 6 7 8 9

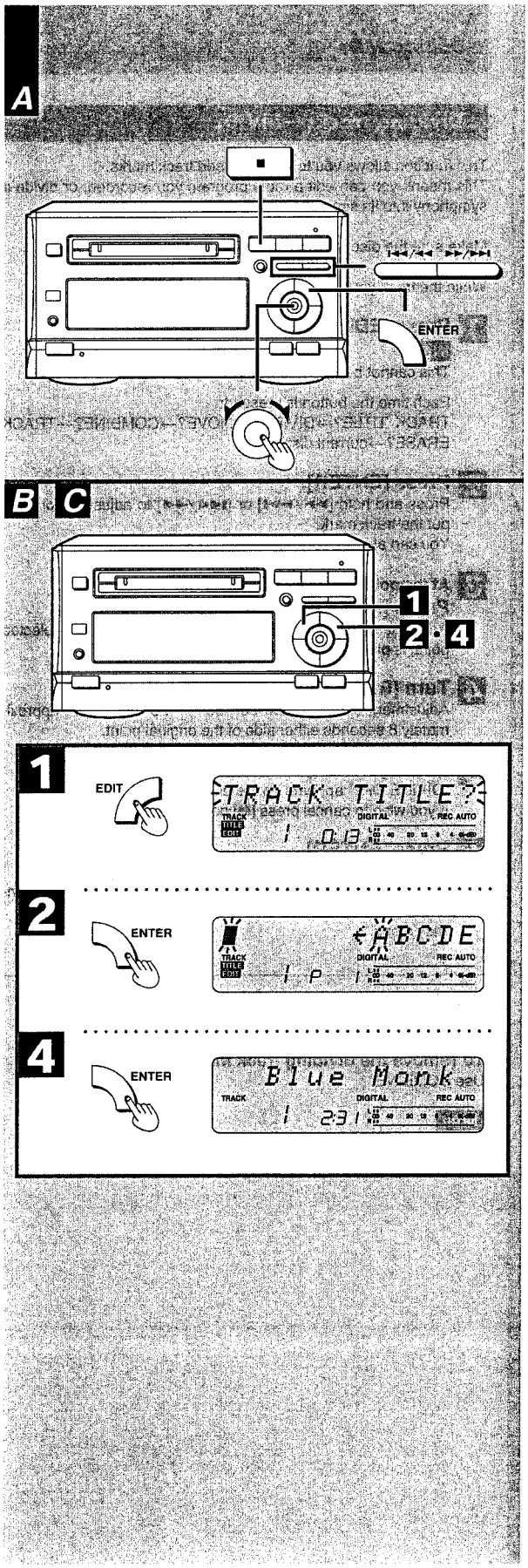
5 Turn [REC LEVEL/JOG] to select the letter (ⓒ).
Five letters are shown on the right hand side of the display at one time.
Turn [REC LEVEL/JOG] or press [TRACK MARKING/CHARA SKIP] to show the next group of five letters.

6 Press [REC LEVEL/JOG].
The selected letter is now shown on the left hand side of the display and the cursor marks the place where the next character will go.

7 Repeat steps 4, 5 and 6 to complete the title.

8 Press [ENTER].
"UTOC Writing" appears on the display.
When this message disappears the title has been entered.

Stopping part way through
After step 1 or 2: Press [■].
After steps 3 to 7: Press [EDIT] then [■].



Editing MDs

Editing text A

Press [►►/►►I] or [I◄◄/◄◄] to move the cursor.

Erasing letters
Move the cursor so it covers the letter to be erased and press [■].
The letter is erased and the other letters move to fill the space.

Inserting a letter or space
Move the cursor to the letter to the right of the place where the new letter or space is to go.
Now select and enter the new letter with [REC LEVEL/JOG].

Changing letters
① Erase the old letter.
② Insert the new letter.

Making corrections to a title
① Select the title to be corrected.
② Use the above editing techniques to correct the title.
③ Press [ENTER].

Titling a track being recorded B

While recording is in process

1 Press [EDIT].
"TRACK TITLE?" appears on the screen.

2 Press [ENTER].

3 Enter the title.
This can be continued even if the track changes during recording.

4 Press [ENTER].
The previous display is restored and the title is displayed.

The title is entered after recording finishes and "UTOC Writing" disappears from the display.

To cancel part way through
Press [EDIT] until the normal display is restored.

Titling a track being played C

While track is playing

1 Press [EDIT] to select "TRACK TITLE?".
Each time the button is pressed:
TRACK TITLE?→DIVIDE?→MOVE?→COMBINE?→TRACK ERASE?→current display

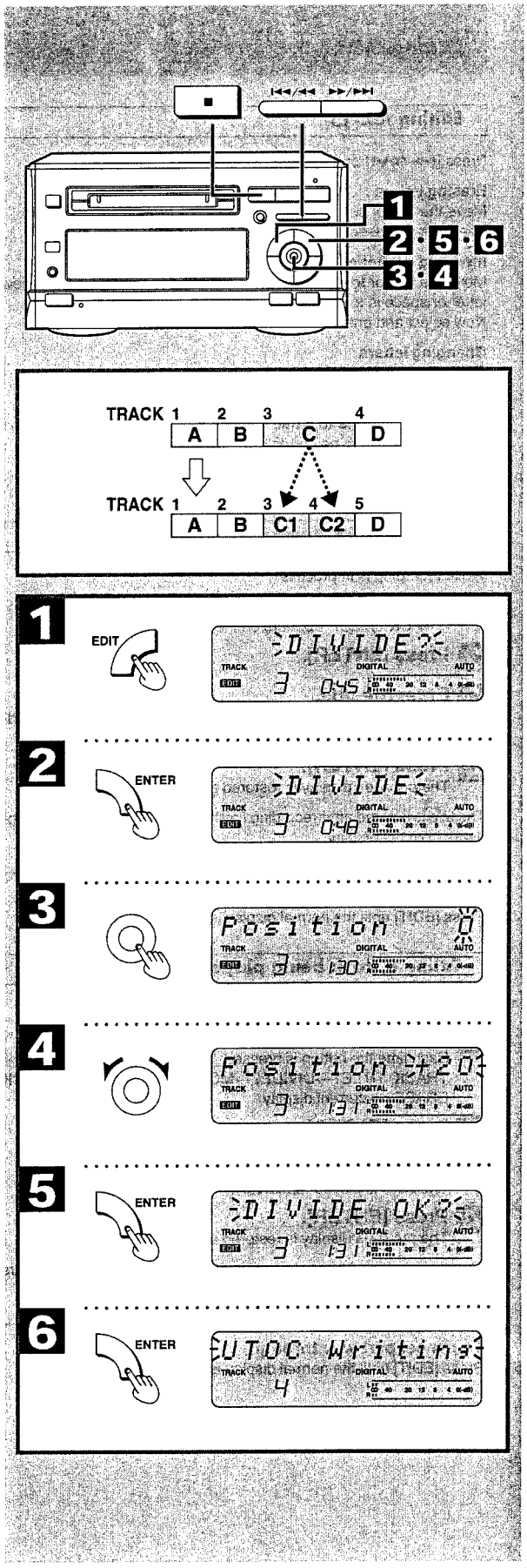
2 Press [ENTER].

3 Enter the title.
The track is played repeatedly.

4 Press [ENTER].
The previous display is restored and the title is displayed.

The title is entered after play stops and "UTOC Writing" disappears from the display.

To cancel part way through
Press [EDIT] until the normal display is restored.



Dividing tracks—DIVIDE

This function allows you to manually add track marks.
This means you can edit a radio program you recorded, or divide a symphony into its separate movements.

Make sure the disc is record enabled.

While the track you want to divide is playing

1 Press [EDIT] to select "DIVIDE?".

Note

This cannot be selected with [EDIT] on the remote control.

Each time the button is pressed:
TRACK TITLE?→DIVIDE?→MOVE?→COMBINE?→TRACK ERASE?→current display

2 Press [ENTER].

Press and hold [►►/►►I] or [I◄◄/◄◄] to adjust the point to put the track mark.
You can also select a different track at this point.

3 At the point you want to add the track mark: Press [REC LEVEL/JOG].

A four second segment of the track, beginning at the selected point, is played repeatedly.

4 Turn [REC LEVEL/JOG] adjust the point.

Adjustment can be made between −128 and +127, approximately 8 seconds either side of the original point.

5 Press [ENTER].

"DIVIDE OK?" appears on the display.
If you wish to cancel press [■] now.

6 Press [ENTER].

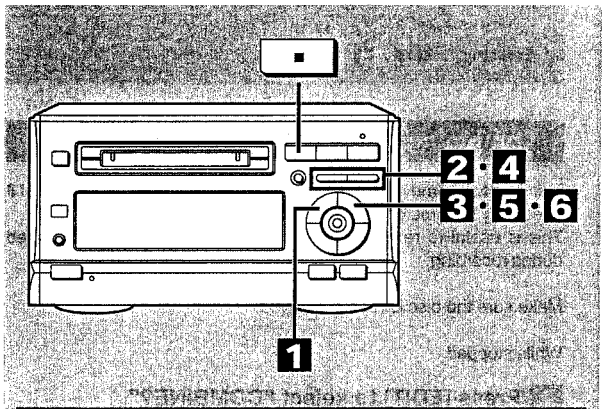
"UTOC Writing" appears on the display.
When this message disappears the track mark has been entered.
Play stops.

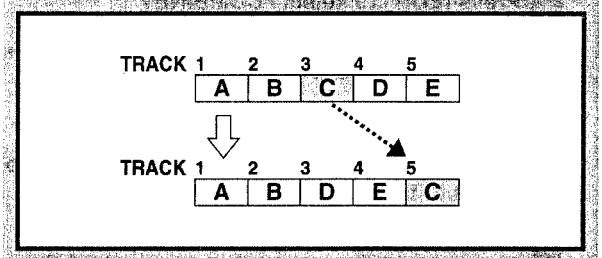
Stopping part way through
Press [■].

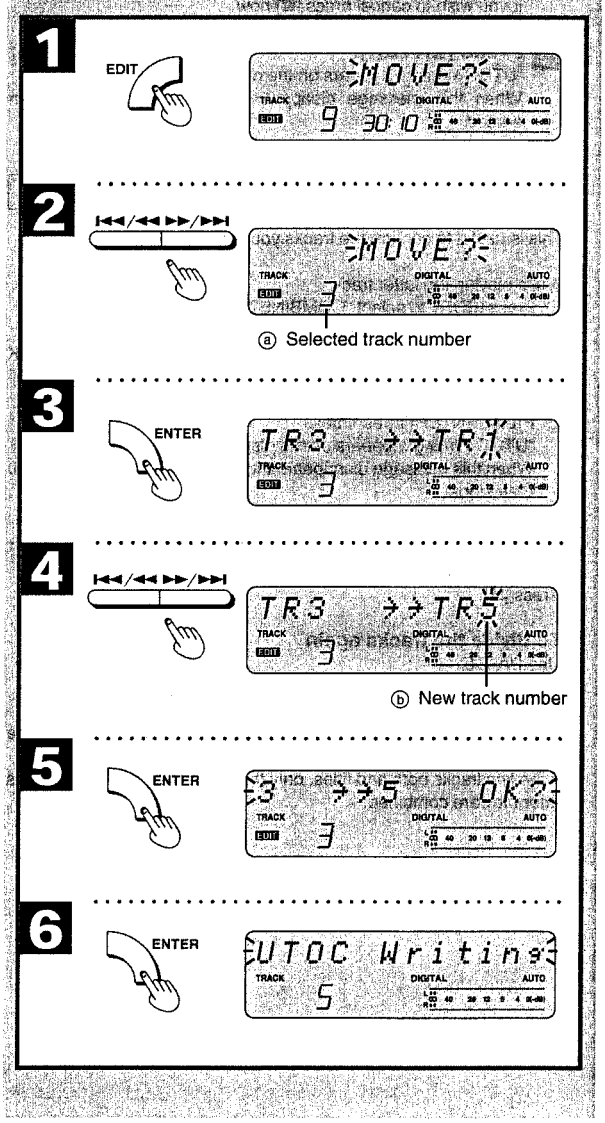
To remove the dividing track mark
Use COMBINE.

Note

If a titled track is divided, the latter half becomes untitled.
There is no interruption to sound even if a track mark is added.







Editing MDs

Moving tracks—MOVE

This function allows you to permanently change the order tracks are played in.

Make sure the disc is record enabled.

While stopped

1 Press [EDIT] to select "MOVE?".
Each time the button is pressed:
TRACK TITLE?→DISC TITLE?→MOVE?→COMBINE?→TRACK ERASE?→ALL ERASE?→current display

2 Press [►►/►►I] or [I◄◄/◄◄] select the track to be moved.

3 Press [ENTER].

4 Press [►►/►►I] or [I◄◄/◄◄] select the position (track number) the track is to be moved to.
To move the track to position 5, track number "5" should be on the display.

5 Press [ENTER].
A message confirming your selection appears on the display.
If you wish to cancel press [■] now.

6 Press [ENTER].
The move is confirmed after "UTOC Writing" disappears from the display.

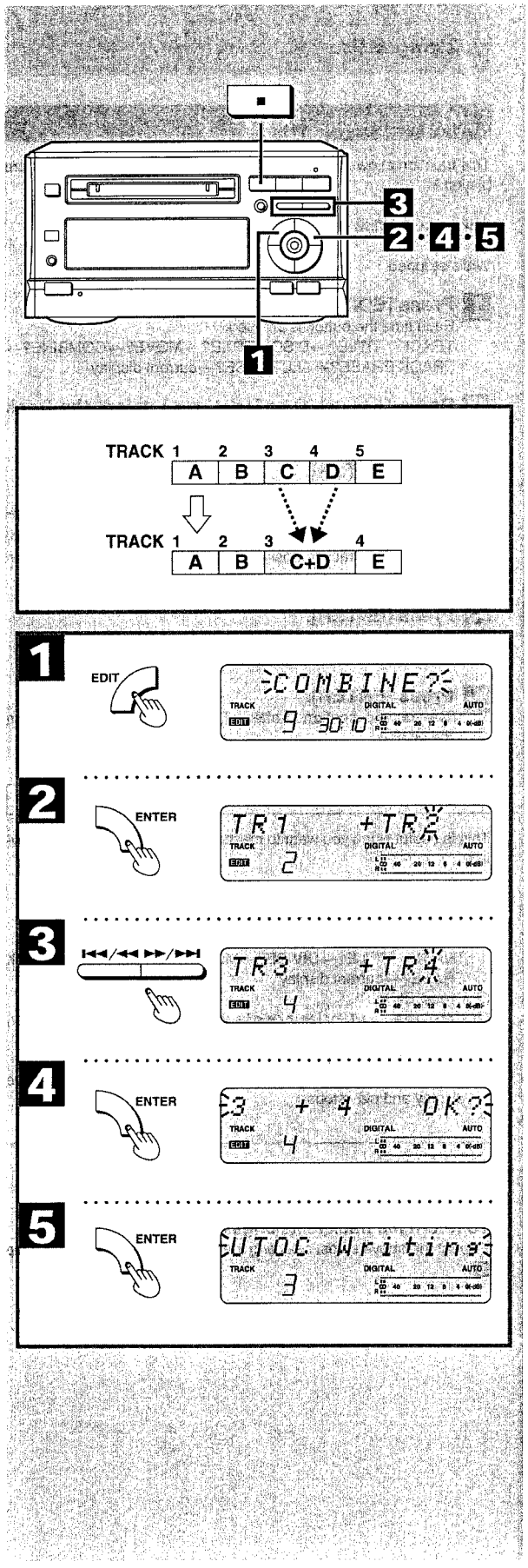
To move a track while it is being played

This is useful when you want to make sure of the track you are moving.

While playing the track to be moved
① Press [EDIT] to select "MOVE?"
Each time the button is pressed:
TRACK TITLE?→DIVIDE?→MOVE?→COMBINE?→TRACK ERASE?→current display
② Press [ENTER].
③ Press [►►/►►I] or [I◄◄/◄◄] select the position (track number) the track is to be moved to.
④ Press [ENTER] twice.
The move is confirmed after "UTOC Writing" disappears from the display and play stops.

To cancel part way through
Press [■].

To return the track to its original position
Repeat the above steps, selecting the track's original position in step 4.



Editing MDs

Combining tracks—COMBINE

This function removes a track mark so the two tracks either side of it effectively become one track.
This is useful to remove track marks that were unnessarily added during recording.

Make sure the disc is record enabled.

While stopped

1 Press [EDIT] to select "COMBINE?".
Each time the button is pressed:
TRACK TITLE?→DISC TITLE?→MOVE?→COMBINE?→TRACK ERASE?→ALL ERASE?→current display

2 Press [ENTER].

3 Press [▶▶/▶▶I] or [I◀◀/◀◀] select the two tracks to be combined.

4 Press [ENTER].
A message confirming your selection appears on the display.
If you wish to cancel press [■] now.

5 Press [ENTER].
"UTOC Writing" appears on the display.
When this message disappears the track mark has been erased.

Combining tracks during play

This is useful to confirm the tracks you want to combine.

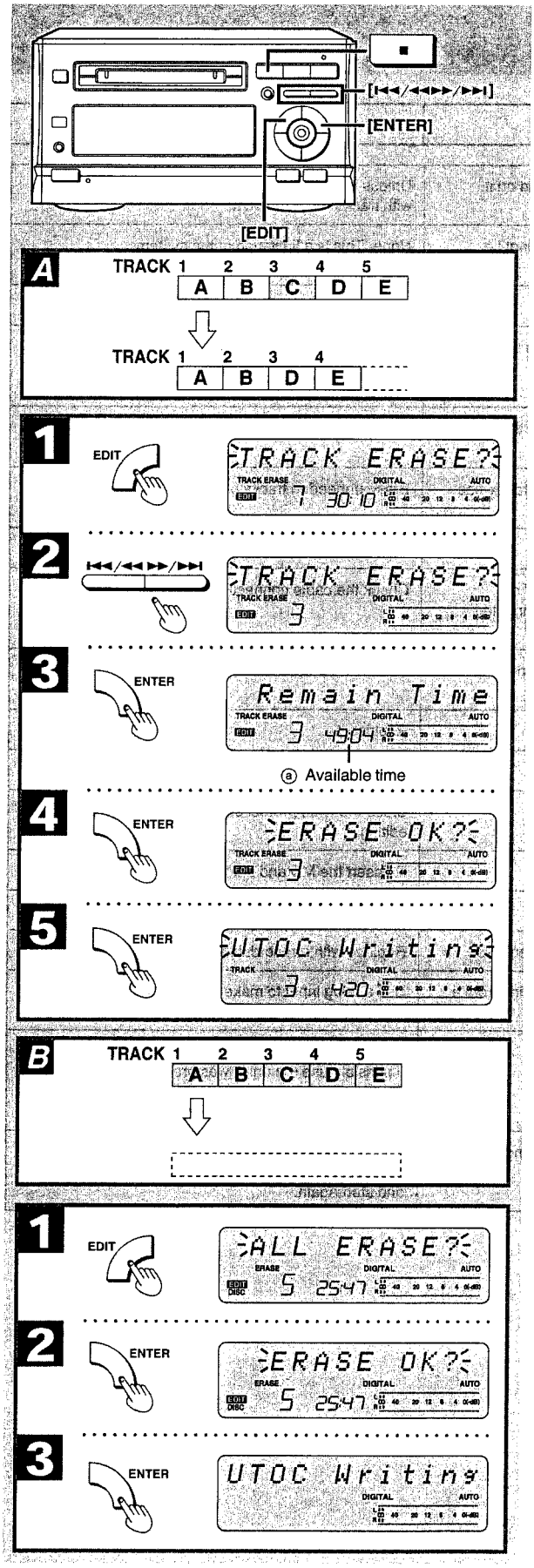
While playing the latter track.
① Press [EDIT] to select "COMBINE?"
Each time the button is pressed:
TRACK TITLE?→DIVIDE?→MOVE?→COMBINE?→TRACK ERASE?→current display

② Press [ENTER] three times.
"UTOC Writing" appears on the display.
When this message disappears the track mark has been erased.
Play stops.

To cancel part way through
Press [■].

To divide the tracks again
Use DIVIDE.

Note
A track recorded in stereo mode and a track recorded in mono mode cannot be combined.
If the two tracks both had titles, only the title of the first track remains after they are combined.



Editing MDs

Erasing tracks

A

Unneeded tracks can be erased and the available recording time can be increased.

Make sure the disc is record enabled.

While stopped

1 Press [EDIT] to select "TRACK ERASE?".
Each time the button is pressed:
TRACK TITLE?→DISC TITLE?→MOVE?→COMBINE?→
TRACK ERASE?→ALL ERASE?→current display

2 Press [►►/►►I] or [I◄◄/◄◄] select the track to be erased.

3 Press [ENTER].
The amount of recording time available after the track is erased is shown on the display.

4 Press [ENTER].
A message confirming your selection appears on the display.
If you wish to cancel press [■] now.

5 Press [ENTER].
"UTOC Writing" appears on the display.
When this message disappears the track has been erased.

Erasing a track while it is being played

This is useful to check that the right track is erased.

While the track to be erased is being played
① Press [EDIT] to select "TRACK ERASE?".
Each time the button is pressed:
TRACK TITLE?→DIVIDE?→MOVE?→COMBINE?→TRACK
ERASE?→current display
② Press [ENTER] three times.
"UTOC Writing" appears on the display.
When this message disappears the track has been erased.
Play stops.

To cancel part way through
Press [■].

Erasing an entire MD

B

This operation creates a blank disc.

Make sure the disc is record enabled.

While stopped

1 Press [EDIT] to select "ALL ERASE?".
Each time the button is pressed:
TRACK TITLE?→DISC TITLE?→MOVE?→COMBINE?→
TRACK ERASE?→ALL ERASE?→current display

2 Press [ENTER].
A message confirming your selection appears on the display.
If you wish to cancel press [■] now.

3 Press [ENTER].
"UTOC Writing" appears on the display.
When this message disappears the MD has been erased.

To cancel part way through
Press [■].

Error messages

Display	Meaning	Action
BLANK DISC	The MD you inserted has nothing recorded on it.	Unless you intend to record something, insert a disc with tracks recorded on it.
CANNOT COMBINE	You have tried to combine tracks that cannot be combined.	None. This is a limitation of the system.
CANNOT EDIT	You tried to combine track1.	Use this function on tracks numbered 2 or higher.
	You are trying to edit titles that have more than 101 letters.	You cannot edit the title on this unit. If possible, use the unit the title was originally created on to shorten the title first.
UTOC FULL	You have tried to divide a track on an MD that already has 254 tracks on it.	None. This is a limitation of the system.
	You have tried to record on an MD that already has 254 tracks on it	Erase unneeded tracks or replace the MD.
	The title won't fit in UTOC.	Delete unnecessary titles or make the title shorter.
DIGITAL IN UNLOCK	You are trying to record from "DIGITAL 1" or "DIGITAL 2" but the optical cable isn't connected correctly.	Check the cable connections.
	The unit you are trying to record from hasn't been turned on.	Turn the source unit on.
DISC ERROR	The MD is damaged.	Replace it.
DISC FULL	There is no space left on the disc.	Erase unneeded tracks or replace the MD.
DISC PROTECTED	The MD is write protected.	Close the write protect switch to enable recording and editing.
EMERGENCY STOP	A problem occured while recording.	Reinsert the MD and start again.
NO DISC	A disc hasn't been inserted.	Insert a disc.
PLAYBACK DISC	You tried to record on or edit a prerecorded disc.	Replace with a recordable disc.
SCMS CANNOT COPY	You are trying to make a copy of a recording from a digital source.	Use analog input to make the recording.
TRACK PROTECTED	The track is protected.	The track cannot be erased. If possible,use the unit it was protected with to remove the protection. (It is possible to erase all the tracks with this unit.)
EJECT ERROR	A problem occured while ejecting or loading the MD.	The unit will automatically switch off after this is displayed. Remove the MD, switch the unit on again and start again.
LOAD ERROR		

Troubleshooting guide

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation.

If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of Authorized Service Centers (enclosed with this unit) to locate a convenient service center, or consult your Technics dealer for instructions.

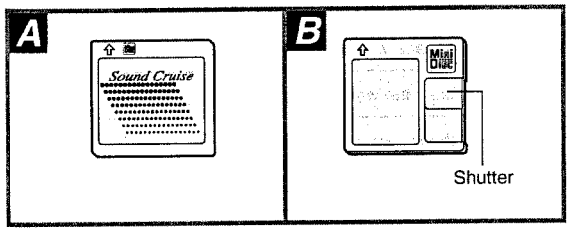
Problem	Possible cause	Action
Cannot start play.	Has an MD been inserted?	Insert an MD.
	Has anything been recorded on the MD?	Insert an MD with tracks recorded on it.
Cannot record.	Are you using a prerecorded MD?	Replace with a recordable MD.
	Is the MD write protected?	Close the write protect switch.
	Is there a problem with the connections?	Check all the connections.
	Is the recording level too low?	Turn the recording level up.
Cannot enter text.	Have you entered the maximum number of letters for the MD (about 1700)?	Shorten the titles on the MD.
There is time remaining on the MD and less than 254 tracks have been recorded, but recording isn't possible.	These phenomena occur from time to time and are due to the recording system used on MDs.	
Recorded time and remaining time do not add up to the total time on the MD.		

MDs

Type of MDs

Prerecorded MDs A
You cannot record onto these MDs.
These MDs are called optical discs.

Recordable MDs B
Recording is magnetic.
These MDs are called optomagnetic discs.
Apart from the time limitations of the MD, up to 254 different tracks can be recorded on an MD.

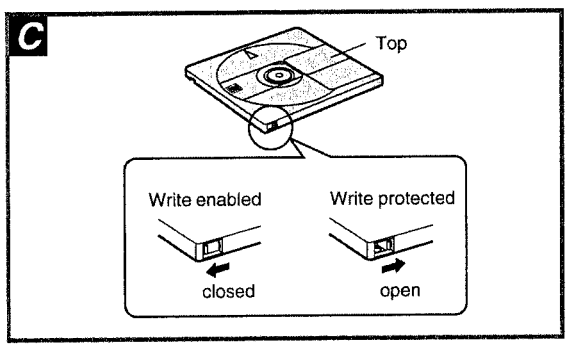


Do not stick labels on the shutter.

Recording and editing MDs

MDs are different to cassettes.
Recording starts from where the last recording ended so it is not necessary to look for a blank section.
When the disc becomes full, use the editing functions to erase tracks you don't want.

Preventing erasure of MDs C
Move the switch to open the hole.
Close the hole when you want to record or edit the MD again.



Limitations on digital recording
The serial copy management system (SCMS) prevents unlimited recording of digital material.
Recording digital sources such as CDs onto MDs through optical fiber connection allows you to make high standard recordings.
To protect the rights of the producer of the original material, it is impossible to make another digital recording of a recording.
Analog recordings are unlimited by this system.

Glossary

Track mark
These are pieces of data on the MD that mark the boundaries of the tracks.
These marks are added automatically during recording or you can add them yourself.
Track marks can be added until track 254 is reached.

TOC
Table of contents.
This is an area on the MD set apart from the recording area that keeps records about the tracks on the MD.

UTOC
User table of contents.
This is TOC information the user can edit.
This may include text information and results of editing operations.
The message "UTOC Writing" appears on the display whenever UTOC is being changed in some way.

MARKING
This is the action of adding track marks.
This may be done automatically during recording or the user can add track marks to the place of their choice.

Care

- Label the MD only as recommended.
  Extra labels can catch on the mechanism and cause malfunctions.
  Ensure the MDs you use do not have left over adhesive on them.
- Do not open the shutter.
  If it opens accidentally close it immediately.
  Do not touch the disc.

Storage

Keep your MDs away from:
Direct sunlight
Humid and dusty places
Direct heat from a heating device

Maintenance

If the surfaces are dirty

To clean this unit, wipe with a soft, dry cloth.
If the surfaces are extremely dirty, use a soft cloth dipped in a soap-and-water solution or a weak detergent solution.

- Never use alcohol, paint thinner or benzine to clean this unit.
- Before using chemically treated cloth, read the instructions that came with the cloth carefully.

5 Handling Precautions for Traverse Deck (MD Unit)

The laser diode in the MD unit (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.So, be careful of electrostatic breakdown during repair of the MD unit (optical pickup).

5.1. Handling of MD Unit (optical pickup)

1. Do not subject the MD unit (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. The short land between the No. 25 (LD-GND) and No. 24 (LD) pins on the flexible board is shorted with a solder build-up to prevent damage to the laser diode. (As shown in Fig. 1.)

   To connect to the PC board, be sure to open by removing the solder build-up, and finish the work quickly.
3. Take care not to apply excessive stress to the flexible board (FFC).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

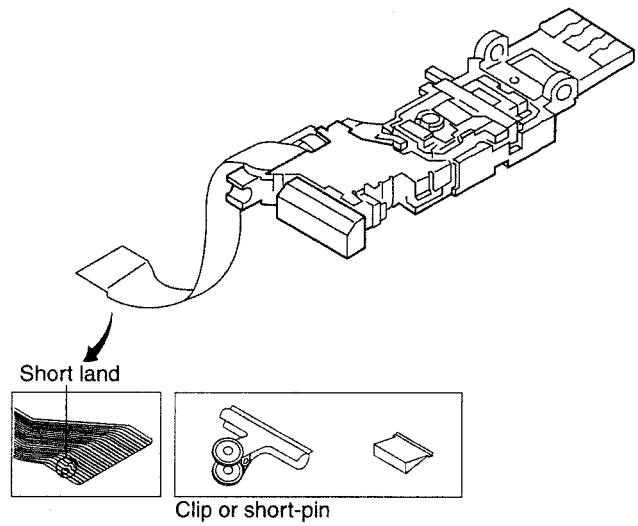


Fig. 1

5.2. Grounding for electrostatic breakdown prevention

1. Human body grounding

   Use the anti-static wrist strap to discharge the static electricity from your body. (As shown in Fig. 2.)
2. Work table grounding

   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).

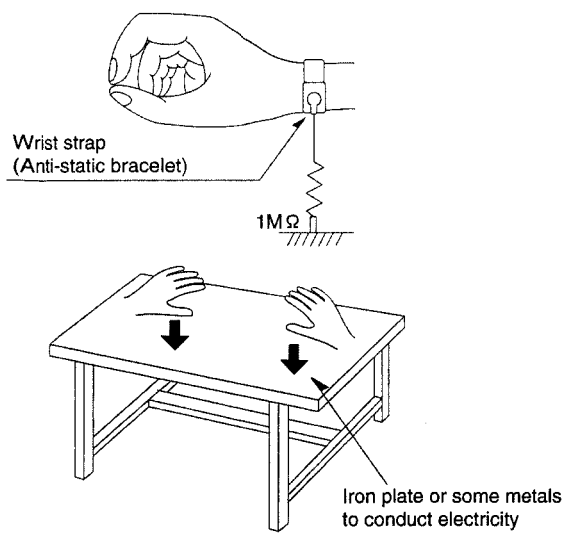


Fig. 2

6 Operation Checks and Main Component Replacement Procedures

NOTE **1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**

2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

3. Select item from the following index when checks or replacement are required.

• Contents

■ Checking Procedures for each P.C.B.

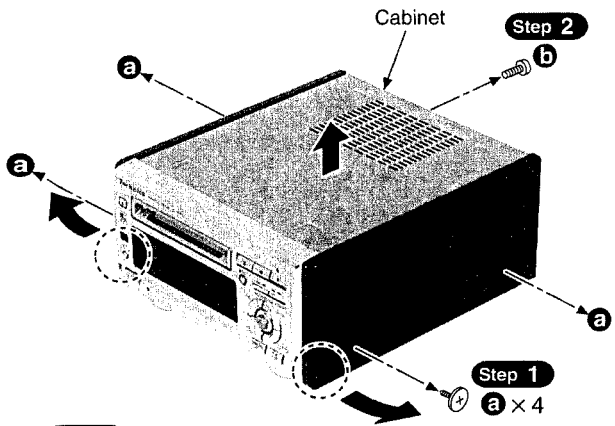
1. Checking for the main P.C.B..
2. Checking for the operation P.C.B..
3. Checking for the MD servo P.C.B..

■ Main Component Replacement Procedures

1. Replacement for the magnetic head and optical pickup ass'y.
2. Replacement for the belt and loading motor ass'y.
3. Replacement for the traverse motor ass'y.

■ Checking Procedures for each P.C.B.

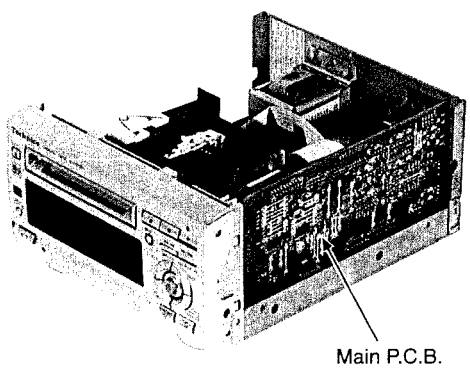
1. Checking for the main P.C.B.



Step 3

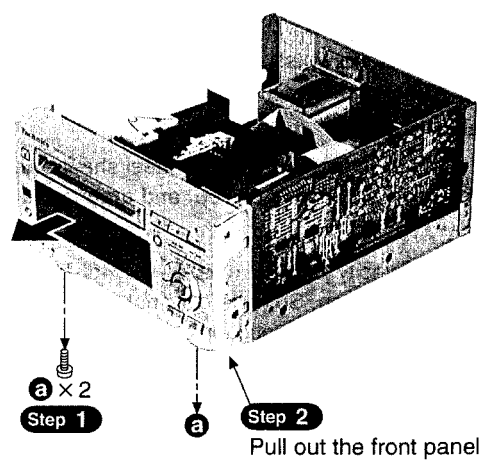
Spreading the both front tails indicated with (◌) of cabinet a small amount, lift up and remove the cabinet in the direction of arrow.

· Check the main P.C.B. as shown below.



2. Checking for the operation P.C.B.

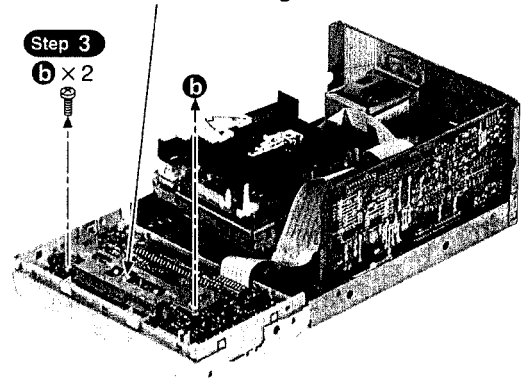
· Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B..



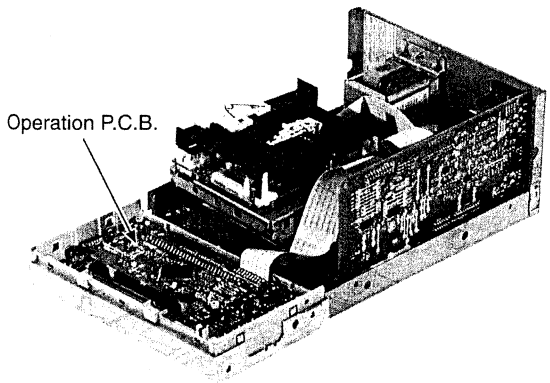
Pull out the front panel ass'y.

Step 4

Remove the angle.

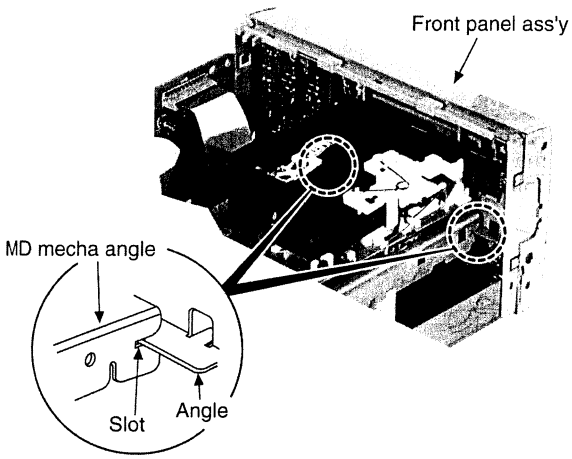


• **Check the operation P.C.B. as shown below.**



Notice for installation of front panel ass'y

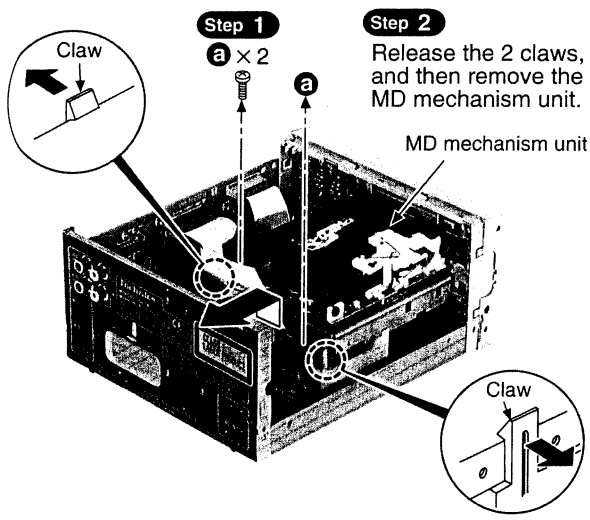
• Make sure the angle of front panel ass'y are fit in the slot of MD mecha angle when assembling.



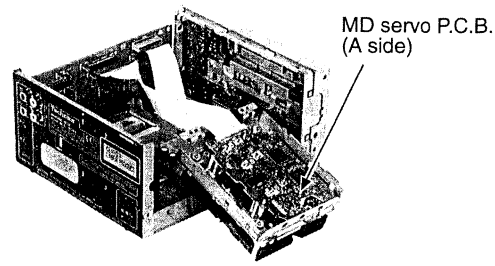
3. Checking for the MD servo P.C.B.

• Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B..

⟨Checking for the MD servo P.C.B. (A side)⟩

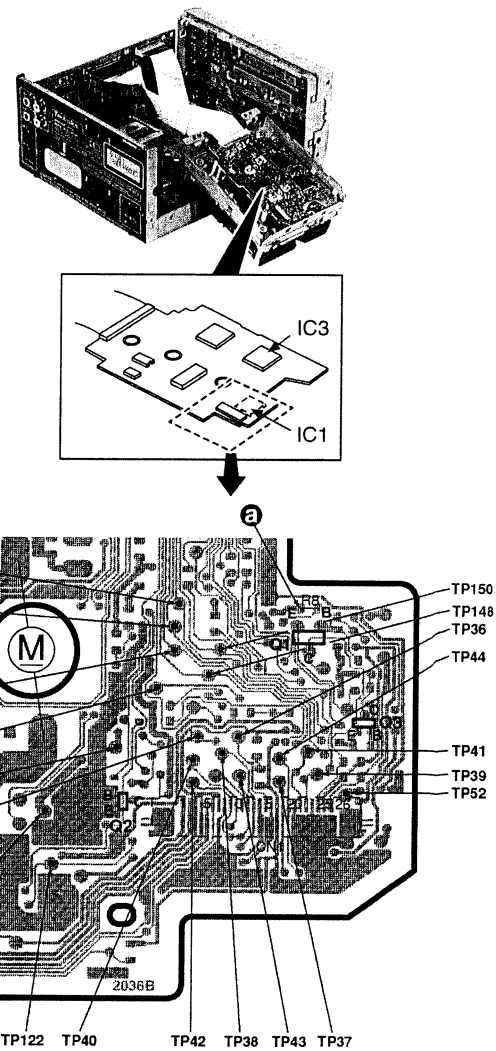


• **Check the MD servo P.C.B. (A side) as shown below.**



⟨Checking for the MD servo P.C.B. (B side)⟩

• When checking the IC1 on the of MD servo P.C.B. (B side), it can be measured with test point on the MD servo P.C.B. (A side).



Pin No. of IC1	Test point	Pin No. of IC1	Test point
2PIN	Left side of R8 (ⓐ)	32PIN	TP52
5PIN	TP54	36PIN	Equivalent for pin 16 of IC3
11PIN	TP55	37PIN	TP35
16PIN	TP57	38PIN	TP44
21PIN	TP56	39PIN	TP37
26PIN	TP36	40PIN	TP38
27PIN	TP150	41PIN	TP43
28PIN	TP149	44PIN	TP42
29PIN	TP148	45PIN	TP40
30PIN	TP123	46PIN	TP39
31PIN	TP122	47PIN	TP41

(The waveforms are noted on the schematic diagram.)

■ Main Component Replacement Procedures

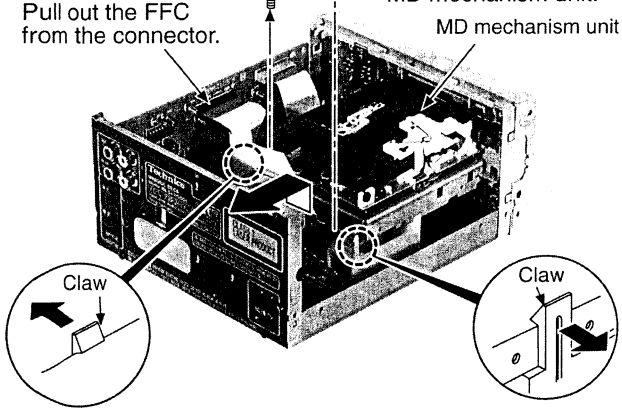
1. Replacement for the magnetic head and optical pickup

- Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B..

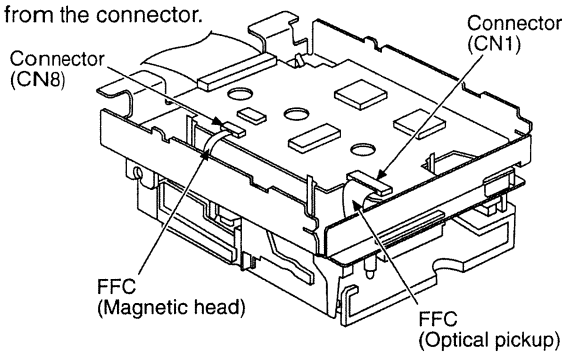
Step 1 ⓐ×2

Step 2 Pull out the FFC from the connector.

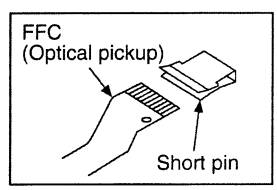
Step 3 Release the 2 claws, and then remove the MD mechanism unit.



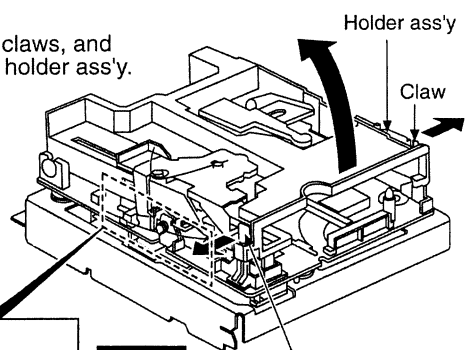
Step 4 Remove the 2 FFCs from the connector.



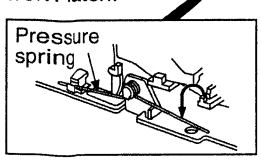
NOTE
Insert a short pin into the traverse unit FFC borad.
(Refer to "Handling Precautions for Traverse deck".)



Step 6 Release the 2 claws, and then lift up the holder ass'y.

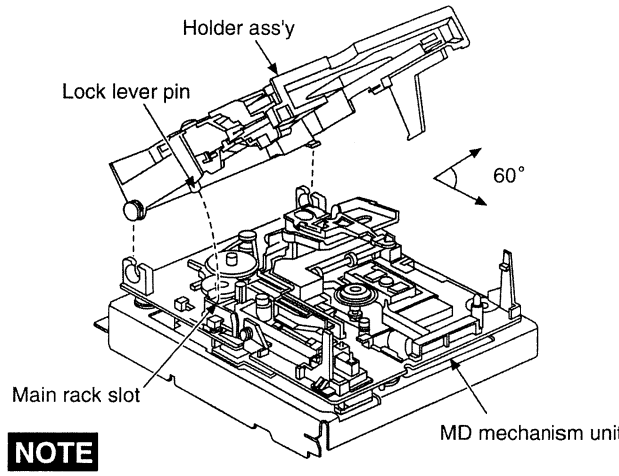


Step 5 Remove the pressure spring from latch.



NOTE
When installing the holder ass'y, the pressure spring should be latched correctly.

Step 7 Set the holder ass'y and MD mechanism unit at a 60 degree angle, and then pull out the holder ass'y.

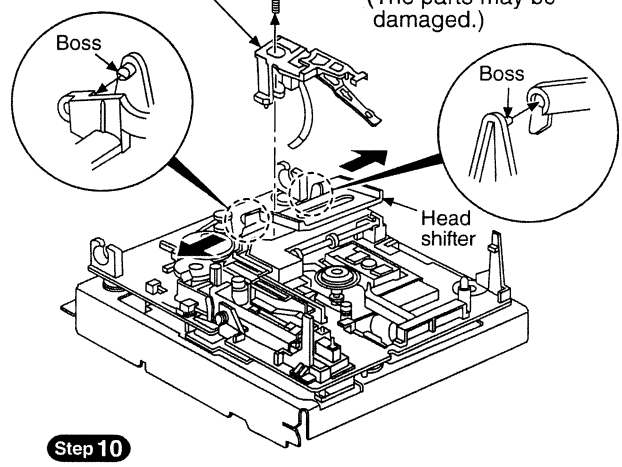


NOTE
When installing the holder ass'y, align the lock lever pin with the main rack slot.

NOTE
1. Take care not to damage the magnetic head.
2. Do not tighten the set screw (ⓑ) in excessive torque. (The parts may be damaged.)

Step 9 Remove the magnetic head [RED0047-1].

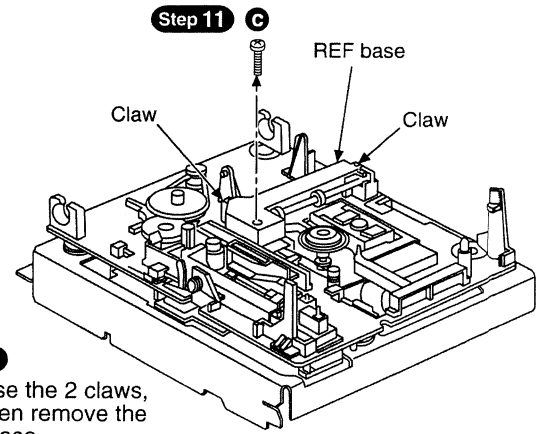
Step 8 ⓑ



Step 10 Spread the lugs of head shifter, and then release the lugs from boss.

Step 11 ⓒ

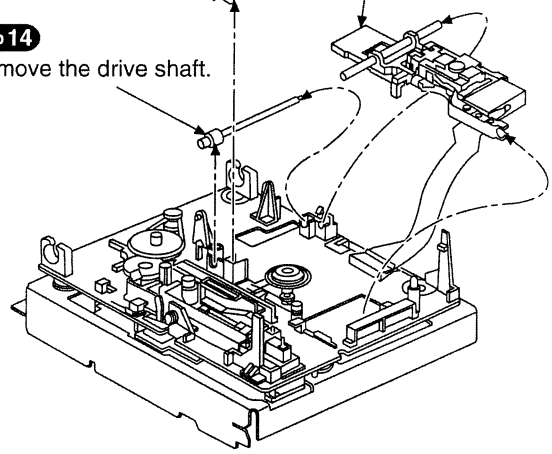
Step 12 Release the 2 claws, and then remove the REF base.



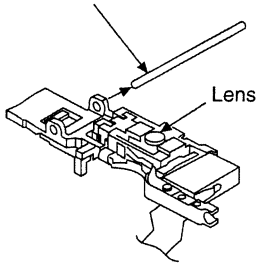
Step 13
Remove the thrust spring.

Step 15
Remove the optical pickup ass'y.

Step 14
Remove the drive shaft.



Step 16
Pull out the main shaft.

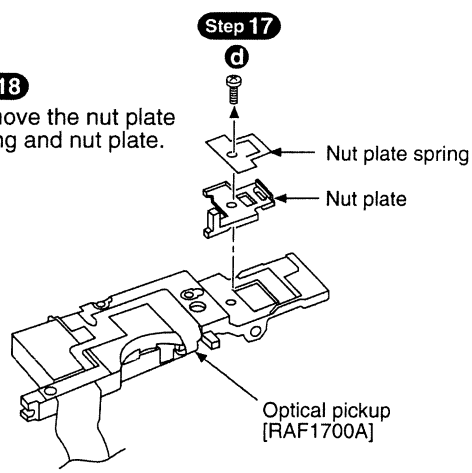


NOTE

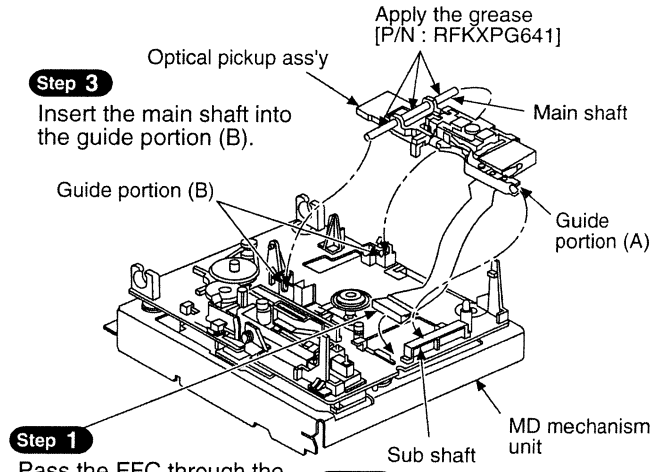
1. Use care to prevent damage the optical pickup, due to the precision construction.
2. Do not apply the grease on the lens of optical pickup.
3. Do not touch the lens of the optical pickup.

Step 17
ⓓ

Step 18
Remove the nut plate spring and nut plate.



Notice for installing the optical pickup

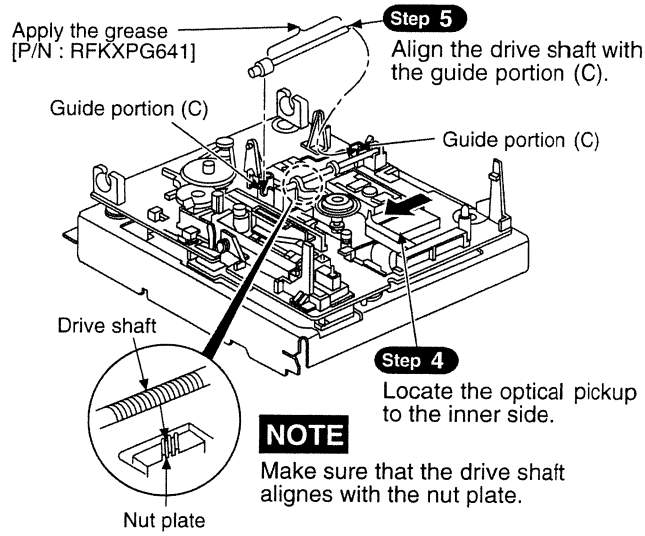


Step 3
Insert the main shaft into the guide portion (B).

Step 1
Pass the FFC through the slot of MD mechanism unit.

Step 2
Align the guide portion (A) of optical pickup with the sub shaft.

NOTE
Take care not to bend the FFC.



Step 5
Align the drive shaft with the guide portion (C).

Step 4
Locate the optical pickup to the inner side.

NOTE
Make sure that the drive shaft alignes with the nut plate.

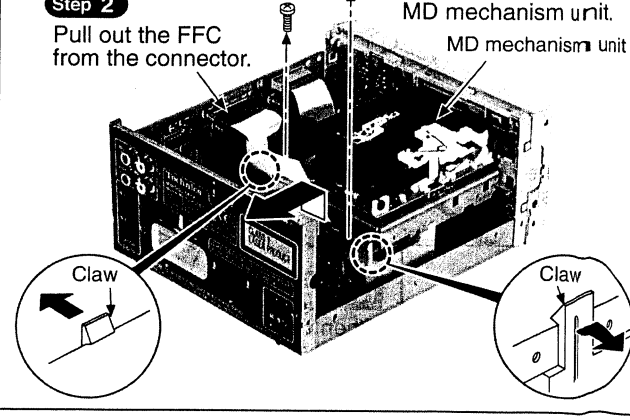
2. Replacement for the belt and loading motor ass'y

· Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B..

Step 1
ⓐ × 2

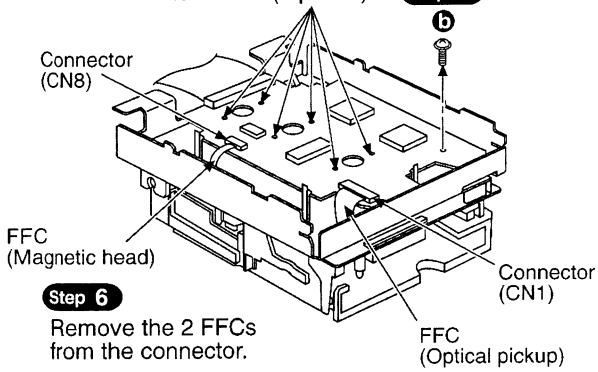
Step 2
Pull out the FFC from the connector.

Step 3
Release the 2 claws, and then remove the MD mechanism unit.



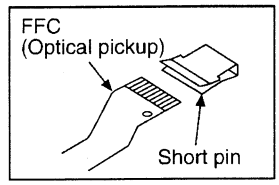
Step 5
Unsolder the motor terminals (6 points).

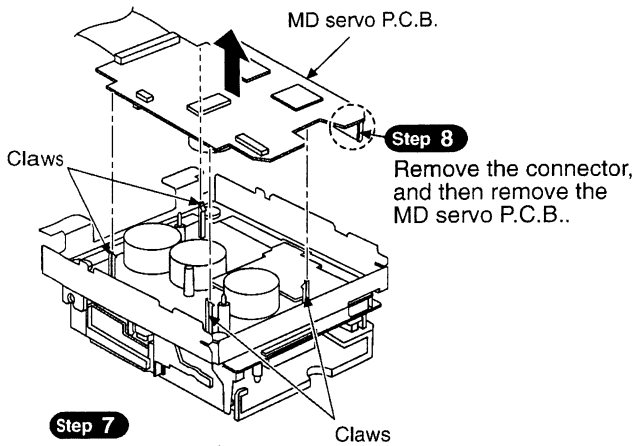
Step 4



Step 6
Remove the 2 FFCs from the connector.

NOTE
Insert a short pin into the traverse unit FFC borad.
(Refer to "Handling Precautions for Traverse deck".)

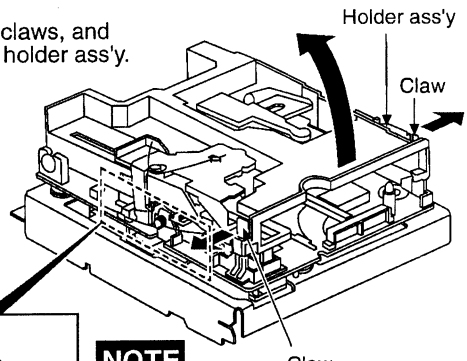




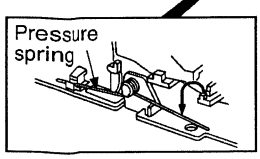
Step 8
Remove the connector, and then remove the MD servo P.C.B..

Step 7
Release the 4 claws.

Step 10
Release the 2 claws, and then lift up the holder ass'y.

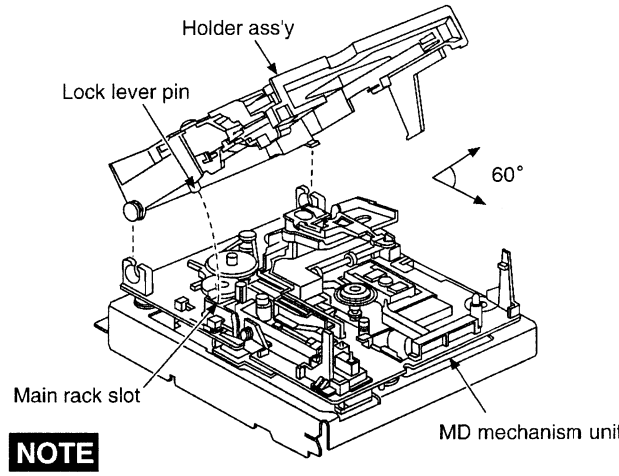


Step 9
Remove the pressure spring from latch.



NOTE
When installing the holder ass'y, the pressure spring should be latched correctly.

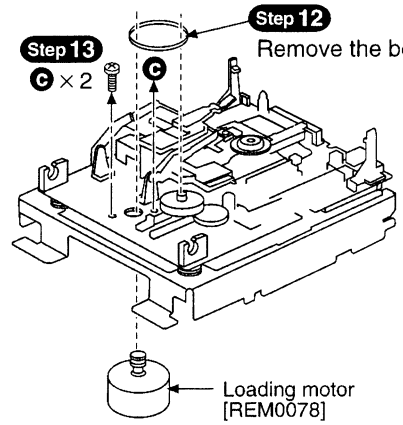
Step 11
Set the holder ass'y and MD mechanism unit at a 60 degree angle, and then pull out the holder ass'y.



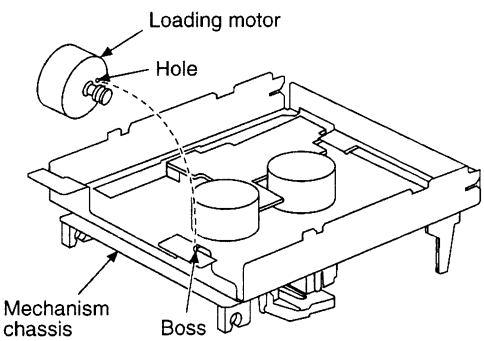
NOTE
When installing the holder ass'y, align the lock lever pin with the main rack slot.

Step 12
Remove the belt [RDV0055].

Step 13
C × 2



Notice for installing the loading motor



- Align the hole of loading motor with the boss of mechanism chassis, and then install the loading motor.

3. Replacement for the traverse motor ass'y

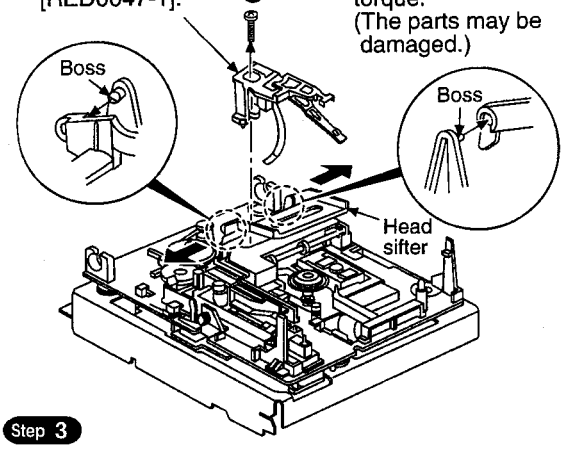
- Follow the Step 1 ~ Step 3 of the item 1 in checking procedure for each P.C.B..
- Follow the Step 1 ~ Step 11 of the item 2 in main component replacement procedures.

NOTE

1. Take care not to damage the magnetic head.
2. Do not tighten the set screw (ⓐ) in excessive torque. (The parts may be damaged.)

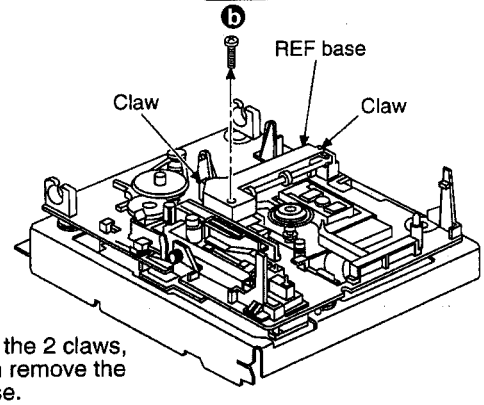
Step 2
Remove the magnetic head [RED0047-1].

Step 1 ⓐ



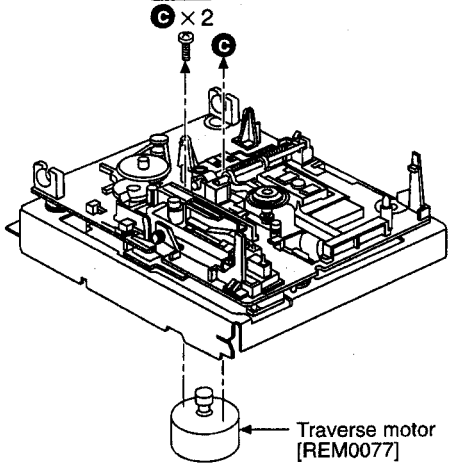
Step 3
Spread the lugs of head shifter, and then release the lugs from boss.

Step 4 ⓑ



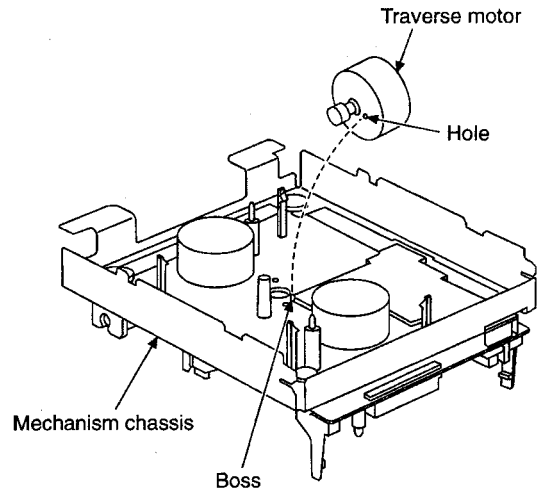
Step 5
Release the 2 claws, and then remove the REF base.

Step 6 ⓒ×2



Notice for installing the traverse motor

- Align the hole of traverse motor with the boss of mechanism chassis, and then install the traverse motor.



7 Self-Diagnostic Function

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically display a code indicating the nature of the malfunction. Use this self-diagnostic function when servicing the unit.

7.1. Switching to the Self-Diagnostic Mode

1. Turn the power on.
2. Press and hold the STOP button for at least 2 seconds, and while still pressing the STOP button, press the FWD SEARCH button for at least 2 seconds. (Refer to Fig.1.) The unit enters Self-Diagnostic Mode and is displayed "MD TEST". Then an error code is displayed, if any. For details of the error codes, refer to Fig.2. In the case of no errors, " ******** ----" is displayed on FL.
3. If more than one error exists, the display will sequentially show the respective error codes each time the FWD SEARCH button is pressed.

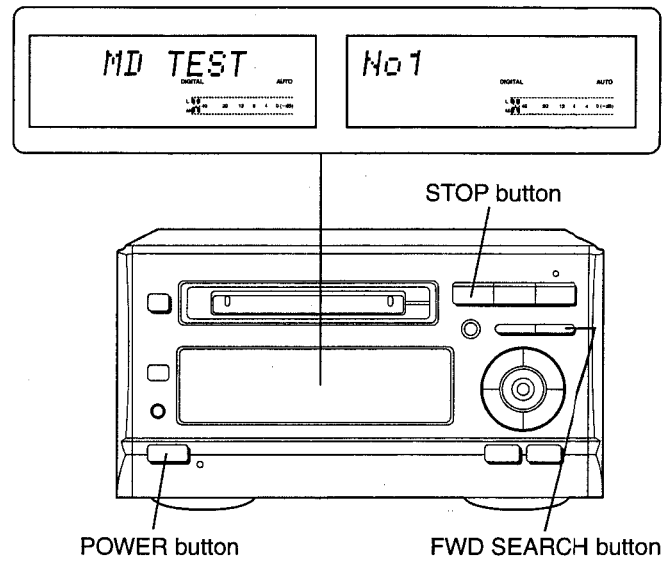


Fig.1

7.2. Canceling the Self-Diagnostic Mode

1. The Self-Diagnostic Mode can be canceled by pressing the POWER button (POWER) to turn the system off. And then pressing the power button again to turn it again.

7.3. Clearing the Self-Diagnostic Mode

1. The contents of abnormality display are stored in memory. In order to clear the memory, continue to press the STOP button for at least 5 seconds while in the Self-Diagnostic Mode. The memory will clear. Always be sure to clear this memory after completing repair.

Error	Symptom	Possible Cause
F15	Interval till MD starts playing is too long.	• Pickup home position sense switch (S8) is defective; check and replace if necessary.
F26	MD is loaded but cannot be played.	• Communications error between the servoprocessor IC and the microprocessor IC (system control). Check if the flexible circuit board is disconnected. • Displayed when the disc is scrached too.
F28	MD cannot be loaded.	• Confirm that the disc is not catching on anything. • The connection (flexible circuit board or connector cable) between the MD unit and the MD servo circuit board is disconnected or damaged; check and replace if necessary. • The MD unit may be malfunctioning; replace it.
F29	MD cannot be ejected.	• Confirm that the disc is not catching on anything. • The connection (flexible circuit board or connector cable) between the MD unit and the MD servo circuit board is disconnected or damaged; check and replace if necessary. • The MD unit may be malfunctioning; replace it.

Fig.2

8 Self Check Function

This unit is equipped with a self check function which can detect a part of malfunction. Use this function before servicing the unit and check the item as shown below.

8.1. Setting to the Self Check Function

1. Turn the power on.
2. Press and hold the STOP button for at least 2 seconds, and while still pressing the STOP button, press the REV. SEARCH button for at least 2 seconds. Then the unit enters Self Check Function. (Refer to Fig.3.)

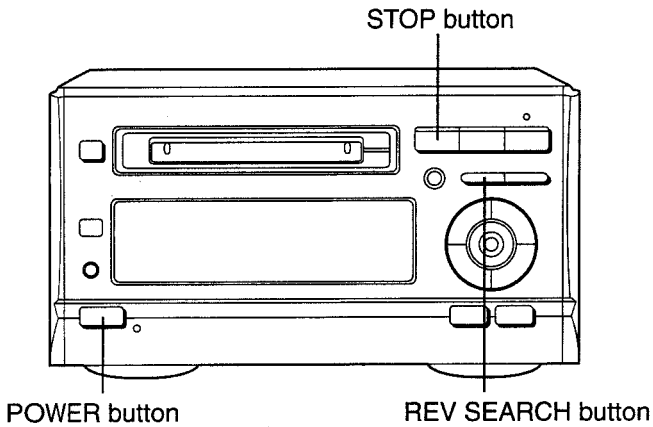


Fig.3

8.2. Checking the operation switches

1. When the unit enters the Self Check Function, the FL display turn off.
2. Press the buttons on the unit except the INPUT SELECTOR button, it displays "-" mark adapted each buttons.

   (**Fig.4 and Fig.5** is shown about a allotment.)

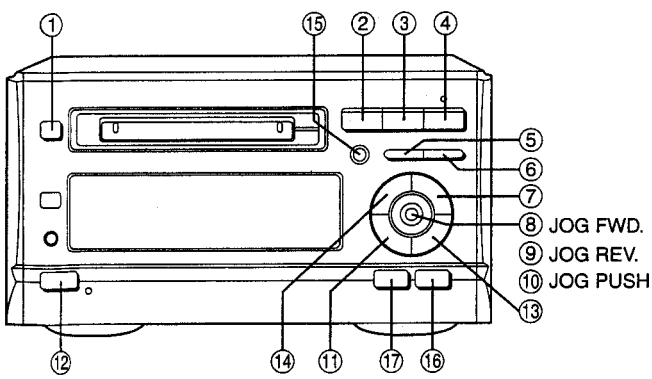


Fig.4

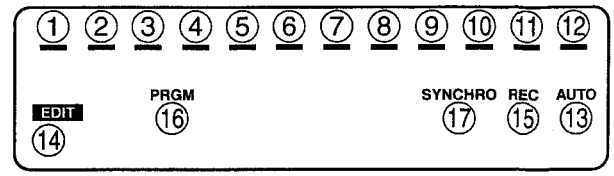


Fig.5

8.3. Checking the FL display

1. Press the INPUT SELECTOR button.
2. All buttons works normally except the POWER button, FL display and LED turns on and off at 0.5 second interval.

   (Refer to Fig.6 and Fig.7.)

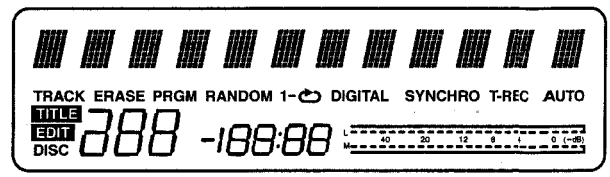


Fig.6

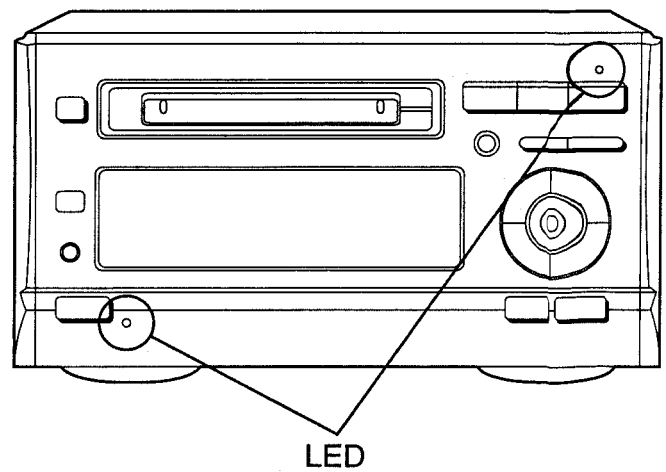


Fig.7

The Self Check Function can be canceled by pressing and holding the STOP button for at least 2 seconds.

9 Measurements and Adjustments (Laser Power Adjustment)

Note:

- If you exchange parts of MD unit when you repair, you must perform the Laser Power adjustment.
- **Because this unit uses the optical magnetic recording, the unit outputs over 10 times more laser than a CD player does. In the adjustment mode, the laser is always being output. Therefore, be especially careful not to look laser beam directly or to touch the laser beam when adjusting the unit and checking its operation.**

9.1. Necessary Instruments

- Laser power meter (LE8010) or cartridge type laser power meter
- Test disc (Pre-mastered disc RFKV0006 or RFKV0014)
- Recordable disc available on sales route (with music recorded)
- Insulated driver for adjustment such as a ceramic driver
- Remote control transmitter

9.2. Set the Unit to the Adjustmint Mode

1. Supply power to the unit.
2. With no MD loaded in the player, simultaneously press the [■ STOP] button and the [▶ FWD. SEARCH] button and hold them both pressed for at least 2 seconds until "MD TEST" appears in the display. (Refer to Fig.8.)
3. At the Self-Diagnostic Mode, press "1" on the player's remote control. "RAM LASER" will be displayed to indicate the read power adjustment mode.

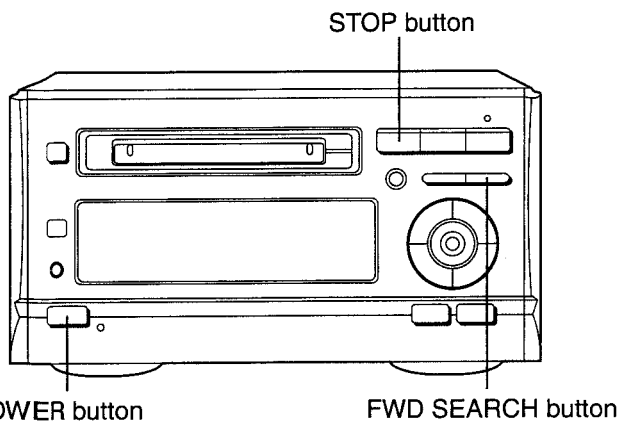


Fig.8

Cautions

1. About handling the MD unit

- The magnetic head is a precision unit and is very fragile. Do not deform it.
- Laser diode in the optical pickup may be destroyed by the staticelectricity generated in your clothes or body. Be especially careful with the static electricity.
- The optical pickup is structured extremely precisely. Do not subject to the strong impact or shock. Do not touch the lens.

2. About handling the magnetic head

When replacing the magnetic head, do not tighten the mounting screw (RHD17022) too firmly. If the screw is tightened too much to deform the resin, the position of the head is moved, and this affects its recording operation.

Recommended torque for mounting screw: 700 g cm +/- 100 g cm

Reference: This is the same force as using a screwdriver with a 15-mm diameter grip, you fasten the screw naturally with your thumb and index finger.

3. About the driver for adjusting laser power

Use only insulated driver such as a ceramic driver. With the metal driver, it is not possible to adjust properly because of the induction noise. Also, if it short-circuits with the chassis, it may destroy or damage the laser diode.

Recommended driver: VESSEL 9000 1.8 -30 (Ceramic driver)

Cautions on optical pickup:

- The optical pickup and the magnetic head are structured precisely; therefore, they are very fragile. Be careful not to touch them with the edge of the laser power meter.
- The sensor of the laser power meter is a very fine part. Be careful not to touch it to the optical pickup lens.
- The focus point of the laser reaches to 356°F. Therefore, avoid adjusting using laser power for a long time because the sensor of the laser power meter may be burned.
- Do not allow the write power to even momentarily reach or exceed **5.5 mW**. Doing so will result in damage to the optical pickup.
- Do not set the unit to the laser power adjustment mode with the MD loaded. Doing so may result in damage to the MD.

9.3. Adjustment Procedure

Note:

There are two methods of adjusting the player, either by using a laser power meter or by using a cartridge type laser power meter.

1. Enter the Adjustment Mode.
2. If using a laser power meter, slide open the sensor cover. (Refer to Fig.9.)

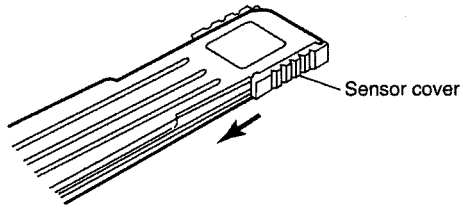


Fig.9

3. If using a laser power meter, position the sensor directly above the optical pickup. (Refer to Fig.10.)

   If using a cartridge type laser power meter, load the cartridge into the MD mechanism. (Refer to Fig.11.)

   Caution:

   Do not allow the laser power meter to come in contact with either the optical pickup or the magnetic head.

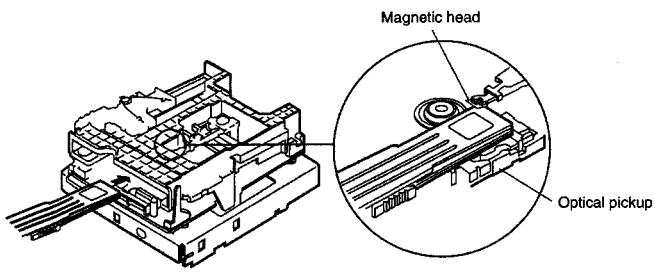


Fig.10

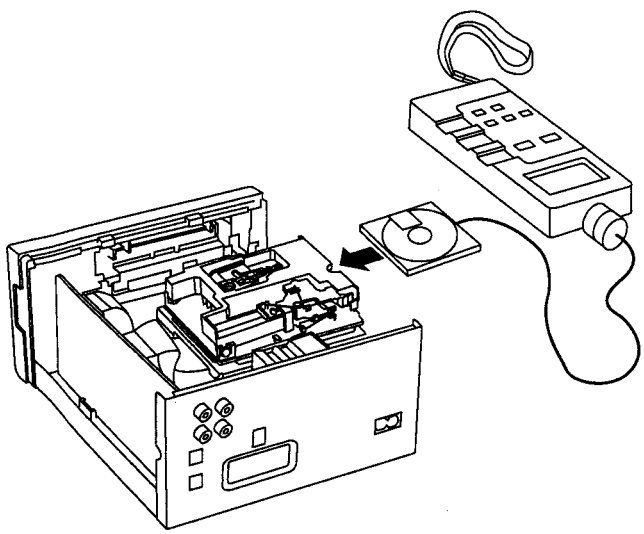


Fig.11

4. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified. If it is not within the specified range, adjust by turning **VR1**. (Refer to Fig.12.)

   Specified range (read power): 600µW or lower

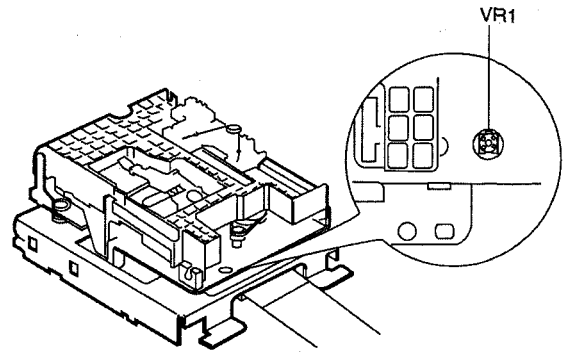


Fig.12

Caution:

- **Proceeding on to the subsequent adjustment procedure with the read power exceeding 680µW will result in damage to the optical pickup.**

5. Press "2" on the player's remote control.

   "WRITE LASER" will be displayed to indicate the write power adjustment mode.

6. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range. If it is not within the specified range, adjust by turning **VR1**. (Refer to Fig.12.)

   Specified range (write power): 4.8±0.1mW

   Caution:

   - **Do not allow the write power to even momentarily reach or exceed 5.5mW. Doing so will result in damage to the optical pickup.**

7. Press "3" on the player's remote control.

   "ROM LASER" will be displayed to indicate the ROM data confirmation mode.

8. Confirm that the reading of the laser power meter or cartridge type laser power meter is within the specified range.

   Specified range (ROM data laser power): 540-660µW

9. Press "1" on the player's remote control.

   "RAM LASER" will be displayed to indicate the RAM data confirmation.

10. Confirm that the reading of the laser power meter or cartridge type laser meter is within the specified range.

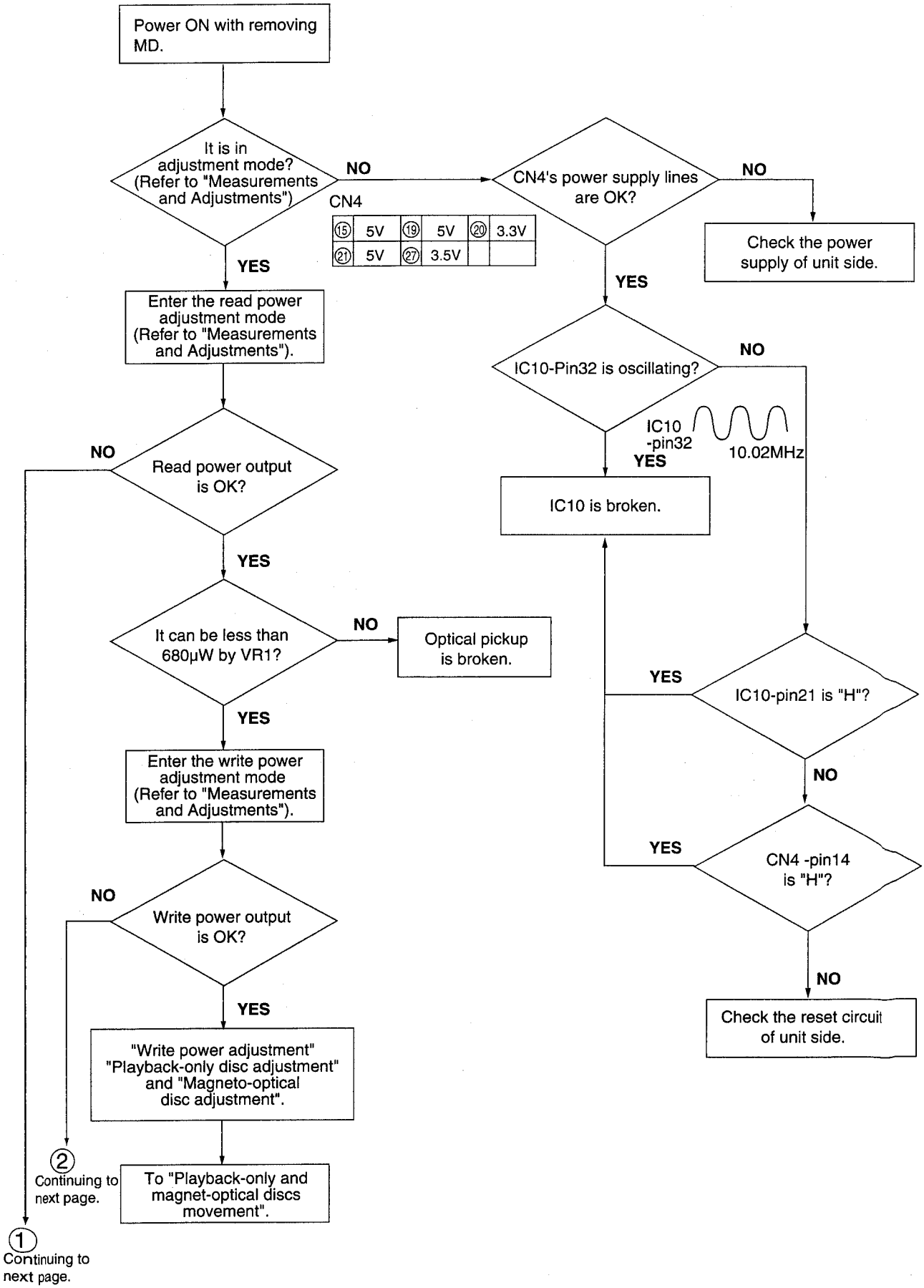
    Specified range (RAM data laser power): 540-660µW

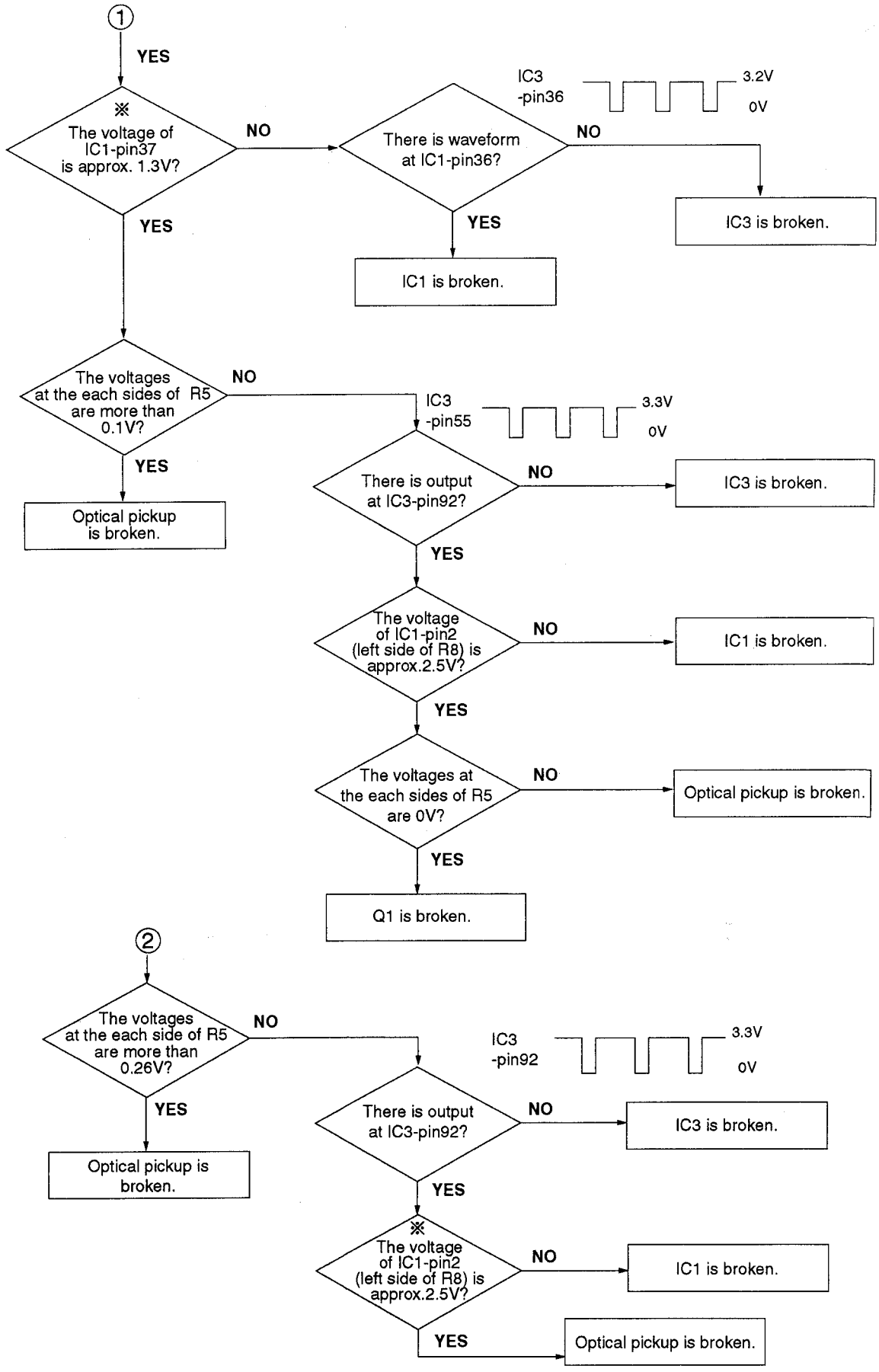
    - **If the reading in either step 8 or 10 above is not within the specified range, first switch off the power, and then reset the unit to the adjustment mode and repeat the adjustment procedure.**

J-HD501

10 Troubleshooting Guide

Please refer to this Troubleshooting Guide when you repair for any troubles of this unit.





※When you measure for IC1, refer to "Operation Checks and Component Replacement Procedures".

J-HD501

Playback-only and magneto-optical discs movement.

It can insert the playback-only disc correctly?

NO

YES

The disc is rotating?

NO

YES

Output of IC3-pin21 is oscillating up and down for VREF(1.3V)?

NO

IC3 is broken.

YES

There are voltages between IC2-pin17 and pin18?

NO

IC2 is broken.

YES

Spindle motor is broken.

IC3-pin21

The voltage fluctuates up and down for VREF (1.3V)

CN4-pin18's voltage becomes from "H" to "L" when the disc is inserted?

NO

LOADING TRG S7 is broken.

YES

H: 3.3V/L: 0V

IC10	Disc tray OPEN	STOP/PLAY	REC
S3: LOAD OPEN SW0⑮	L	H	H
S4:DISC IN⑬	H	L	L
S5: LOAD PLAY/REC SW2⑰	H	L	H
S6: LOAD PLAY SW3⑱	H	H	L

Outputs of IC10-pins 13,15,17 and 18 are OK?

NO

S3,5,4,6 are broken.

YES

The voltages of IC10-pins 8,9 are OK?

NO

IC10 is broken.

YES

There are voltages at IC92-pins 2,4?

NO

IC92 is broken.

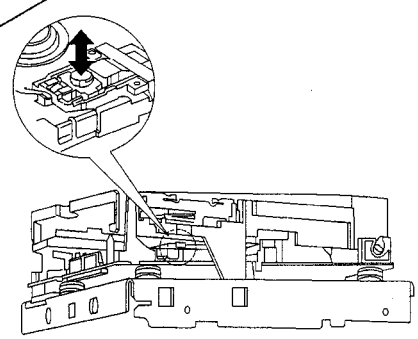
YES

Loading motor is broken.

Optical pickup is moving up and down?

NO

YES



IC3-pin18

The voltage fluctuates up and down for VREF(1.3V)?

Output of IC3-pin18 is oscillating up and down for VREF (1.3V)?

NO

IC3 is broken.

YES

There are voltages between IC2-pin13 and pin14?

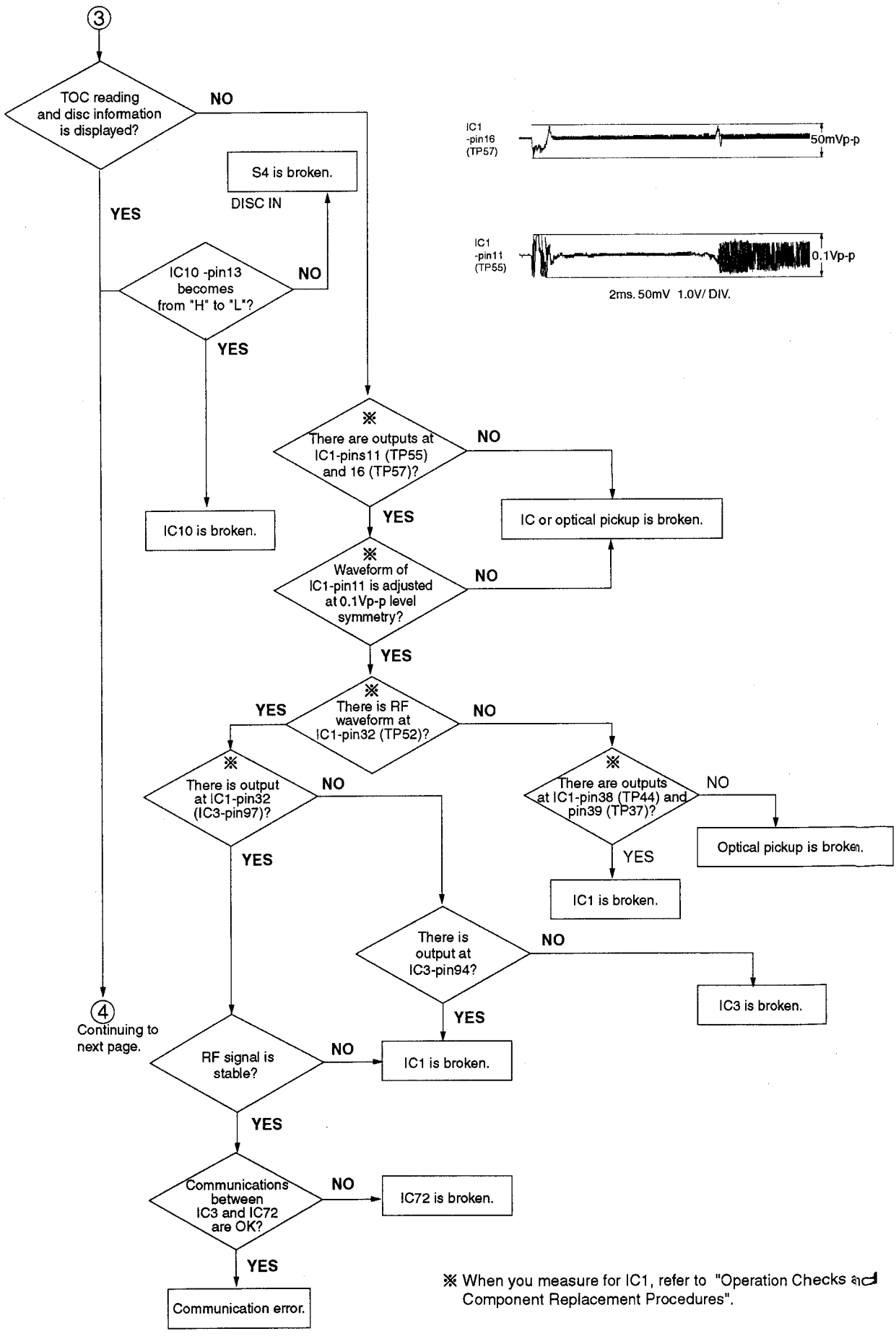
NO

IC2 is broken.

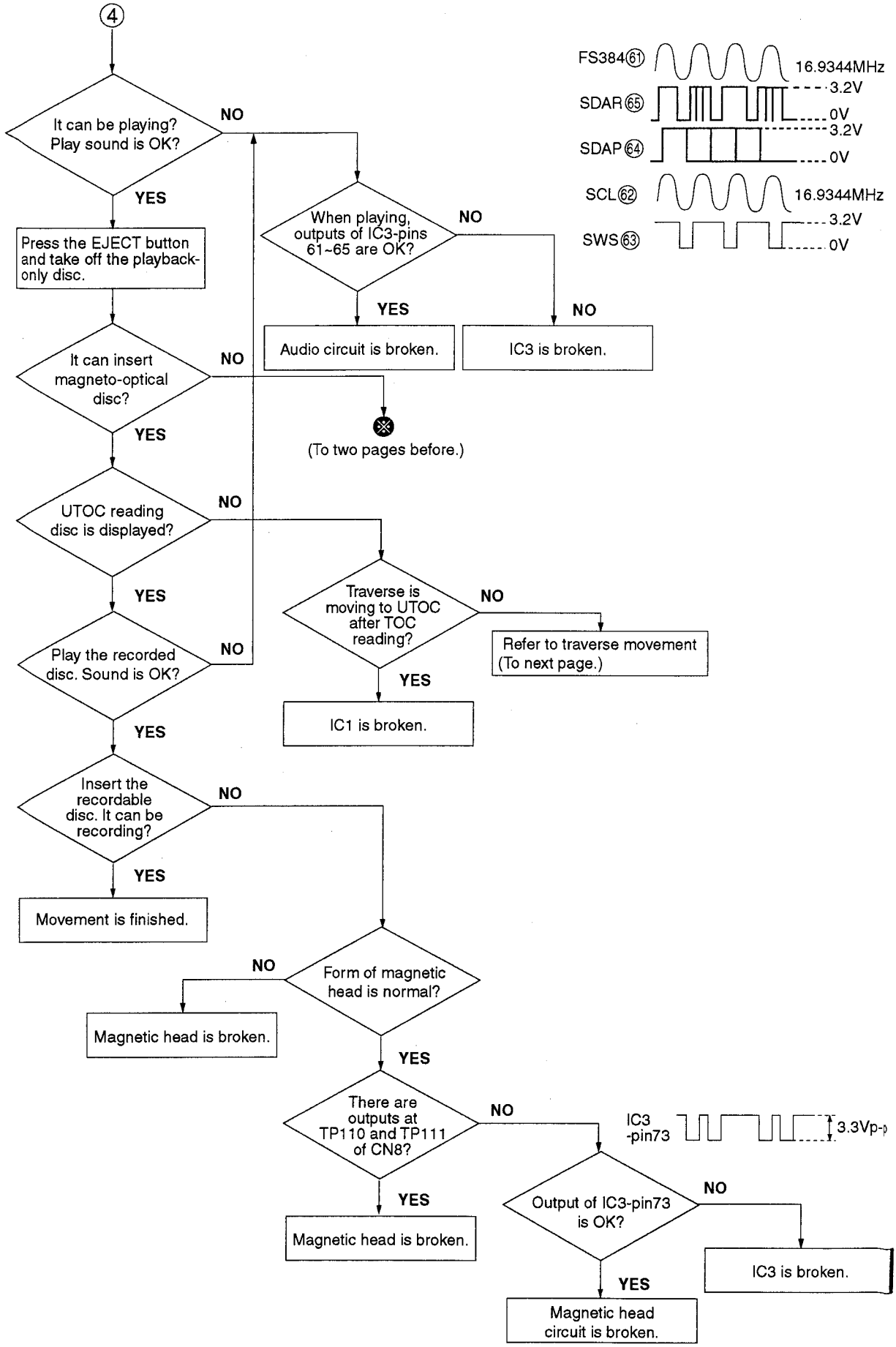
YES

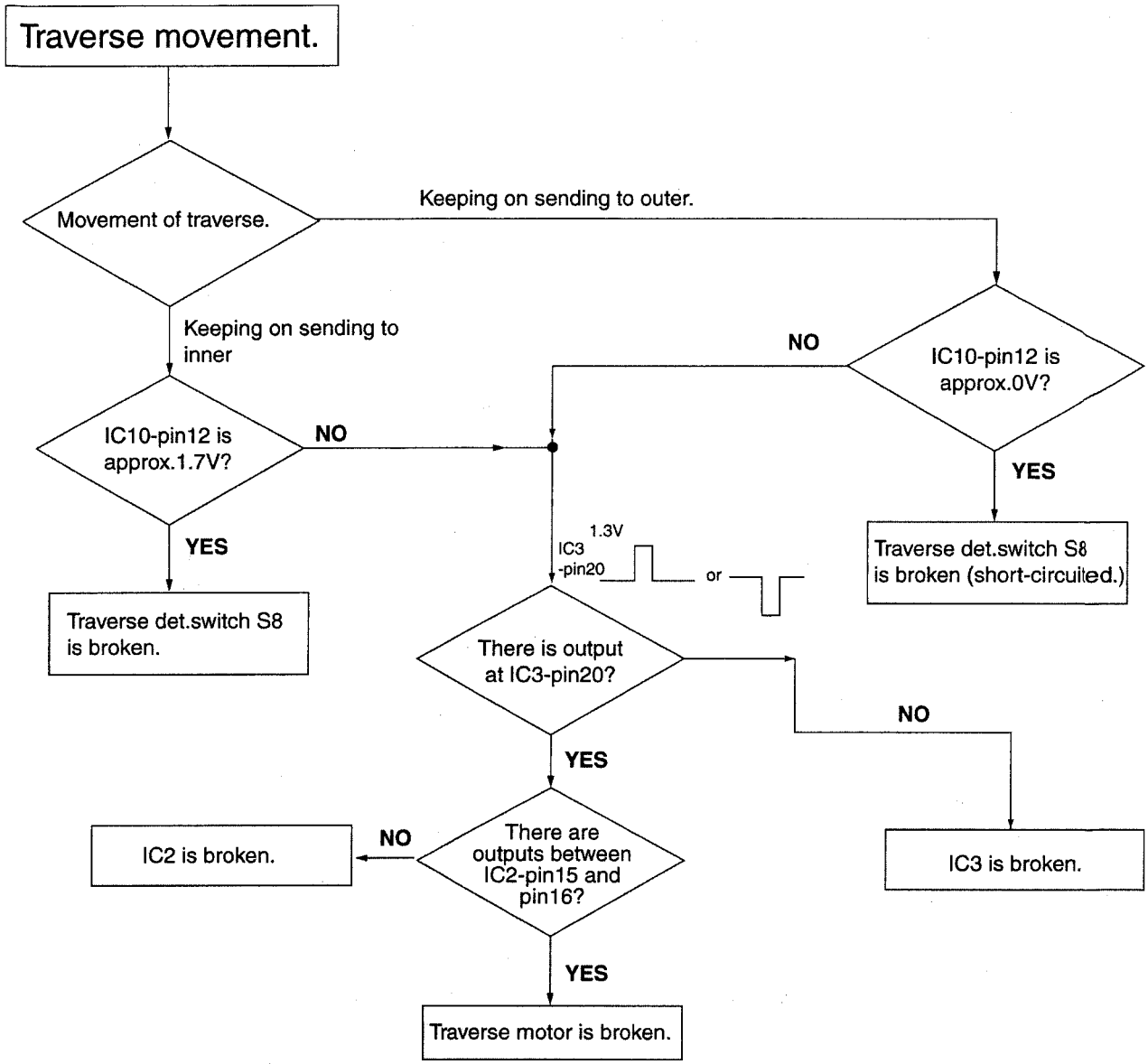
Optical pickup is broken.

③ Continuing to next page.



※ When you measure for IC1, refer to "Operation Checks and Component Replacement Procedures".


④
It can be playing? Play sound is OK?
NO
YES
Press the EJECT button and take off the playback-only disc.
When playing, outputs of IC3-pins 61~65 are OK?
NO
YES
NO
Audio circuit is broken.
IC3 is broken.
It can insert magneto-optical disc?
NO
YES
(To two pages before.)
UTOC reading disc is displayed?
NO
YES
Traverse is moving to UTOC after TOC reading?
NO
Refer to traverse movement (To next page.)
YES
IC1 is broken.
Play the recorded disc. Sound is OK?
NO
YES
Insert the recordable disc. It can be recording?
NO
YES
Movement is finished.
Form of magnetic head is normal?
NO
Magnetic head is broken.
YES
There are outputs at TP110 and TP111 of CN8?
NO
YES
Magnetic head is broken.
Output of IC3-pin73 is OK?
NO
YES
IC3 is broken.
Magnetic head circuit is broken.
FS384 61 16.9344MHz
SDAR 65 3.2V 0V
SDAP 64 3.2V 0V
SCL 62 16.9344MHz
SWS 63 3.2V 0V
IC3 -pin73 3.3Vp-p


Traverse movement.
Movement of traverse.
Keeping on sending to outer.
Keeping on sending to inner
IC10-pin12 is approx.1.7V?
NO
YES
Traverse det.switch S8 is broken.
IC10-pin12 is approx.0V?
NO
YES
Traverse det.switch S8 is broken (short-circuited.)
1.3V
IC3 -pin20
or
There is output at IC3-pin20?
NO
YES
IC3 is broken.
There are outputs between IC2-pin15 and pin16?
NO
IC2 is broken.
YES
Traverse motor is broken.

11 Schematic Diagram Notes

11.1. Schemtic Diagram Notes

This schematic diagram may be modified at any time with the development of new technology.

Notes:

- S1 : PROTECT det. switch.
- S2 : REFLECT det. switch.
- S3 : LOAD OPEN det. switch.
- S4 : DISC IN det. switch.
- S5 : LOAD PLAY/REC det. switch.
- S6 : LOAD PLAY det. switch.
- S7 : LOAD TRG det. switch.
- S8 : Traverse det. switch.
- S901 : Standby/on (⏻/|) switch.
- S902 : Input selector (INPUT SELECTOR) switch.
- S903 : Skip/Search (|◀◀ / ◀◀) switch.
- S904 : Skip/Search (▶▶ / ▶▶|) switch.
- S905 : Edit (EDIT) switch.
- S906 : Enter (ENTER) switch.
- S907 : Track mark mode select/character skip (TRACK MARKING/CHARA SKIP).
- S908 : Display mode select/character (DISP/CHARA).
- S909 : Eject (▲ EJECT) switch.
- S910 : Stop (■) switch.
- S911 : Playback/Recording start (▶) switch.
- S912 : Record (● REC) switch.
- S913 : Pause (▮▮) switch.
- S914 : Synchro-record (SYNCHRO REC) switch.
- S915 : Playback mode (PLAY MODE) switch.
- VR1: Laser power adj. V.R..
- VR901 : Input level/Jog push set V.R..

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark: MD STOP

( ): MD play [1kHz, L+R, 0dB]

<>: MD rec. [1kHz, L+R, 0dB]

Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

Cover the parts boxes made of plastics with aluminum foil.

Ground the soldering iron.

Put a conductive mat on the work table.

Do not touch the legs of IC or LSI with the fingers directly.

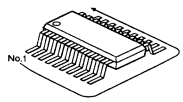
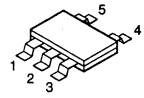
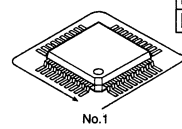
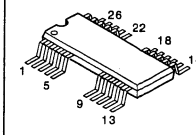
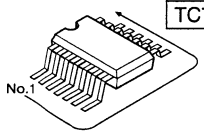
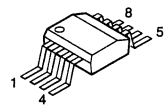
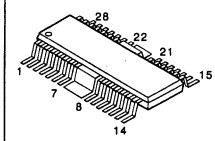
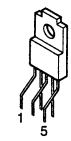
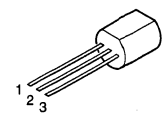
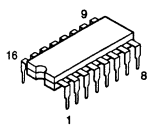
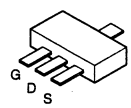
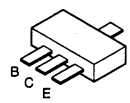
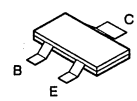
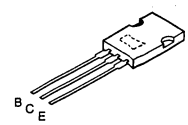
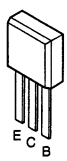
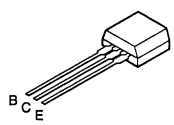
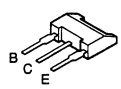
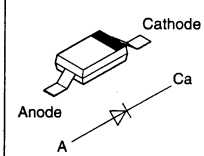
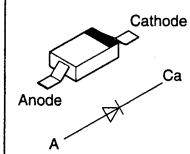
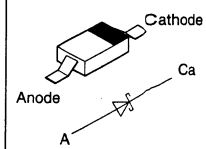
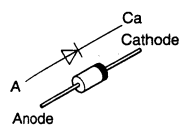
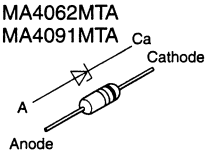
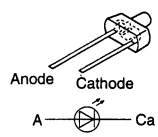
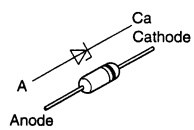
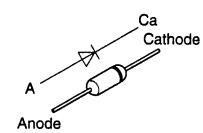
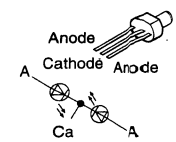
Voltage and signal lines

: Positive voltage line

: Playback signal

: Recording signal

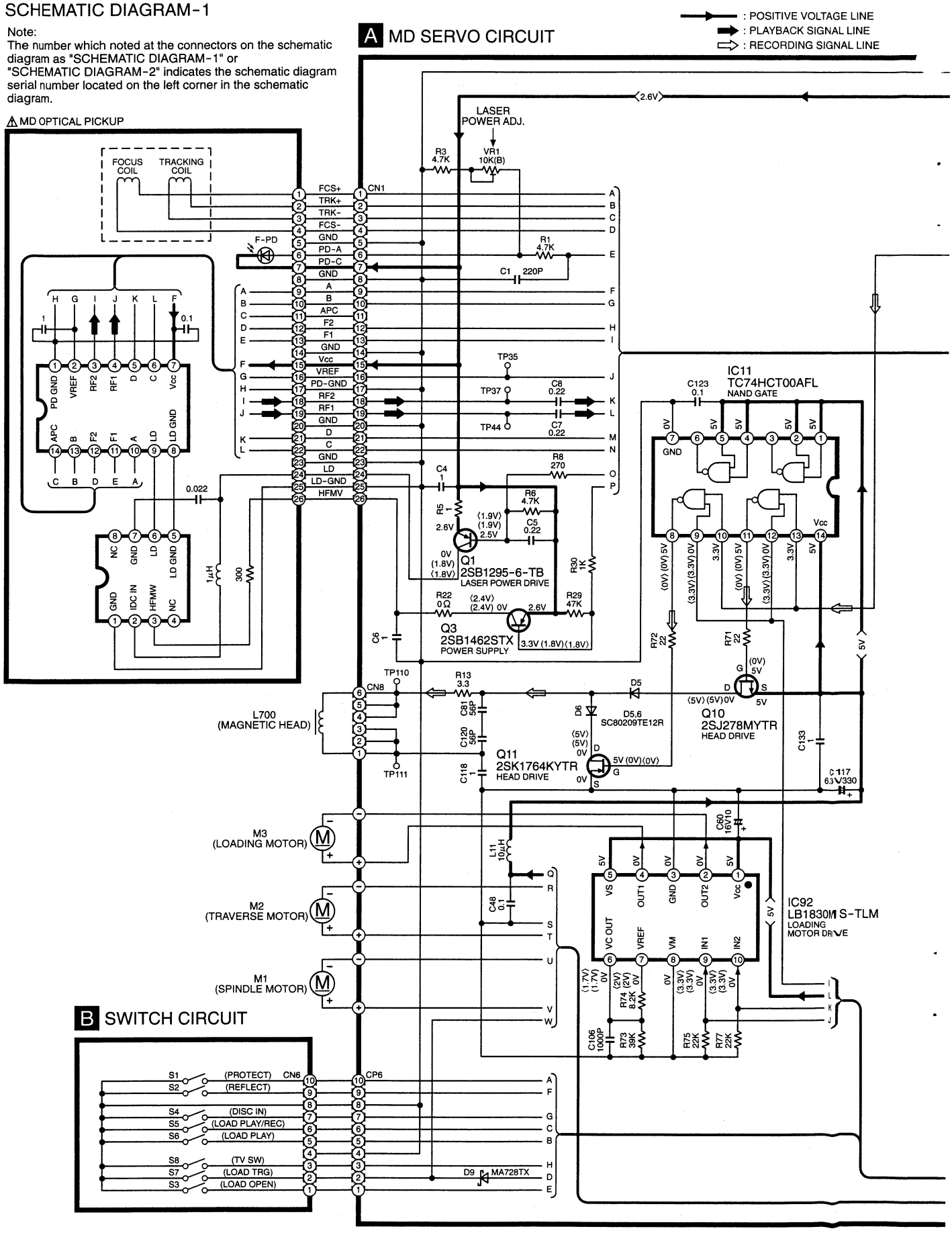
11.2. Type Illustration of IC's, Transistors and Diodes

AK4518VF-E2 24PIN BA4560FE2 8PIN LB1830MS-TLM 10PIN 	PST597ENR RN5RG33AA-TL RN5RZ26BA-TR 	AN8772FHQ 48PIN MN101D03DAA 80PIN MN66616RA1 100PIN M30218MAA106 100PIN 	MNV4400-T8T 	
TC74HCT7007A 14PIN TC74HCT00AFL 14PIN TC74HC4050EL 16PIN 	TC7W04FTE12L 	AN8814SB-E1 	BA05ST-V5 	S81233SGY-Z 
TC9413AP 	2SJ278MYTR 2SK1764KYTR 	2SB1121ST-TD 	2SB1295-6-TB 2SB1462STX 2SD1328RSTTX DTA114EUT106 DTA143EUT106 DTC114EUT106 DTC114YETL 	2SD2037EFTA 
2SD1450RSTTA 	2SA933QRSTA 	2SB1240QRTV6 2SD1862QRTV6 	SC80209TE12R 	MA110TX 	MA728TX 
1D3-E 	MA4051MTA MA4056MTA MA4062MTA MA4091MTA 	SLR-325VCT31 	MA4270HTA 	1SS291TA 	SPR-305MDTF 

12 Schematic Diagram

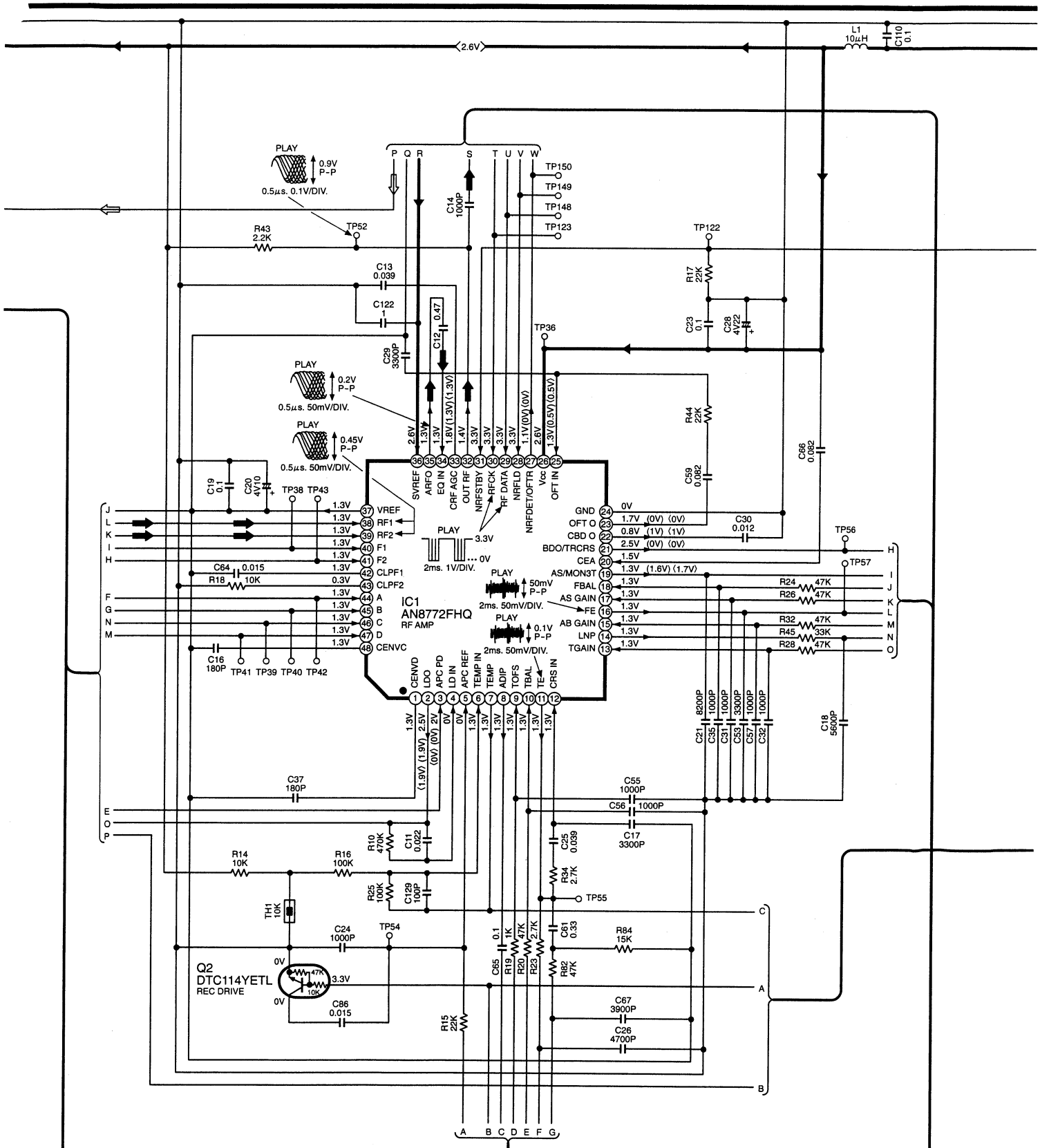
SCHEMATIC DIAGRAM-1

Note:
The number which noted at the connectors on the schematic diagram as "SCHEMATIC DIAGRAM-1" or "SCHEMATIC DIAGRAM-2" indicates the schematic diagram serial number located on the left corner in the schematic diagram.



SCHEMATIC DIAGRAM-2

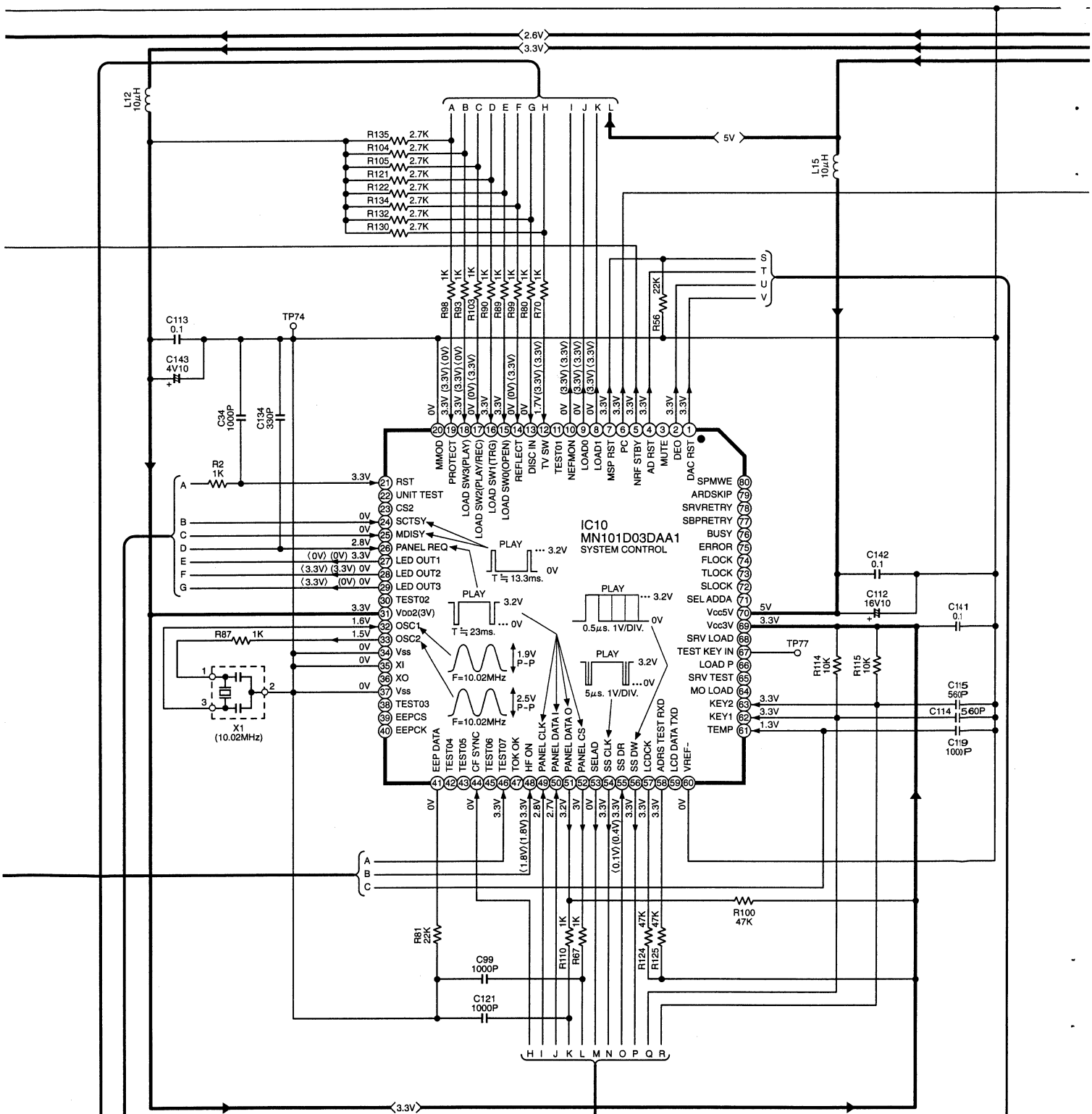
: POSITIVE VOLTAGE LINE : PLAYBACK SIGNAL LINE : RECORDING SIGNAL LINE



SCHEMATIC DIAGRAM-3

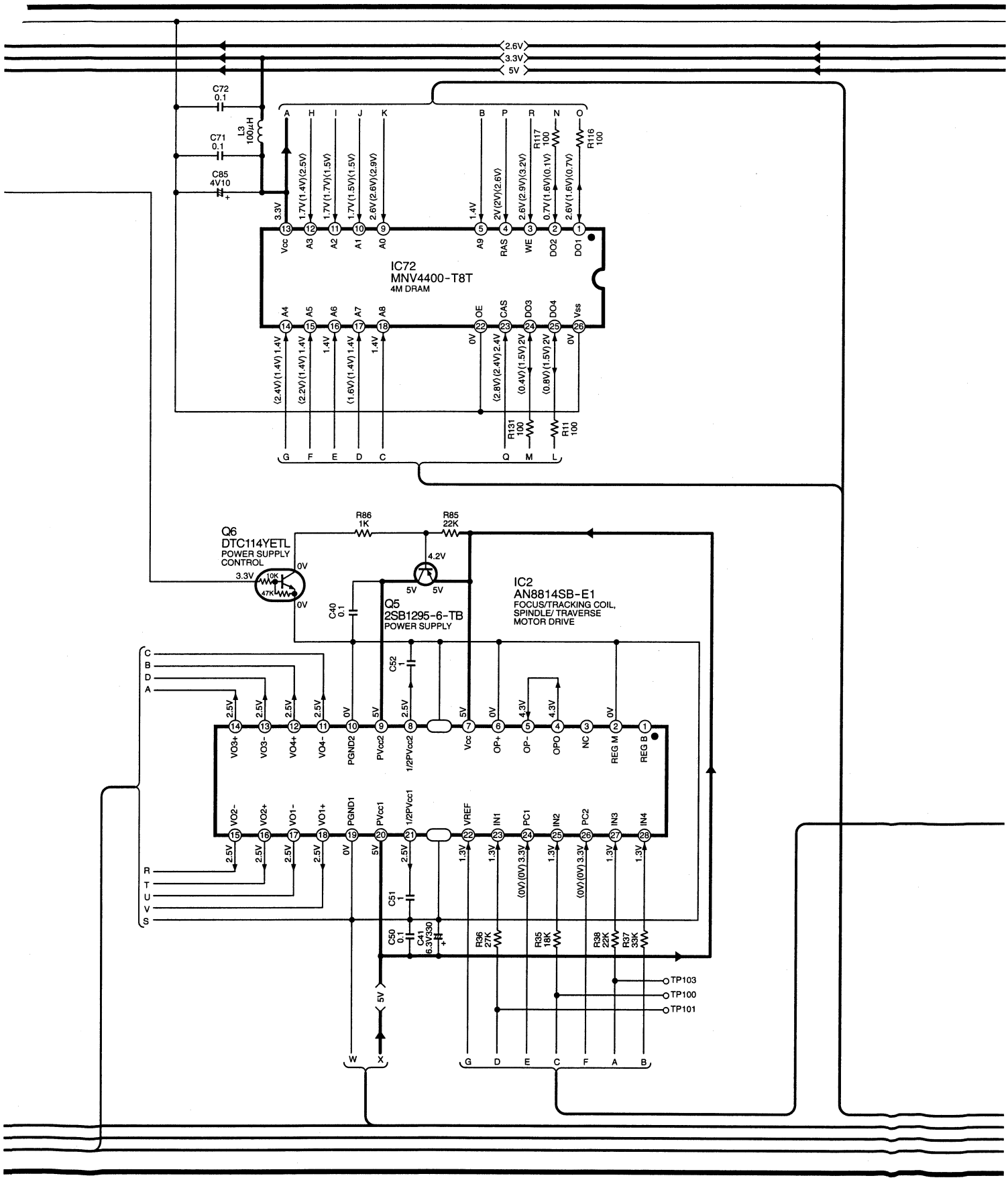
A MD SERVO CIRCUIT

: POSITIVE VOLTAGE LINE



SCHEMATIC DIAGRAM-4

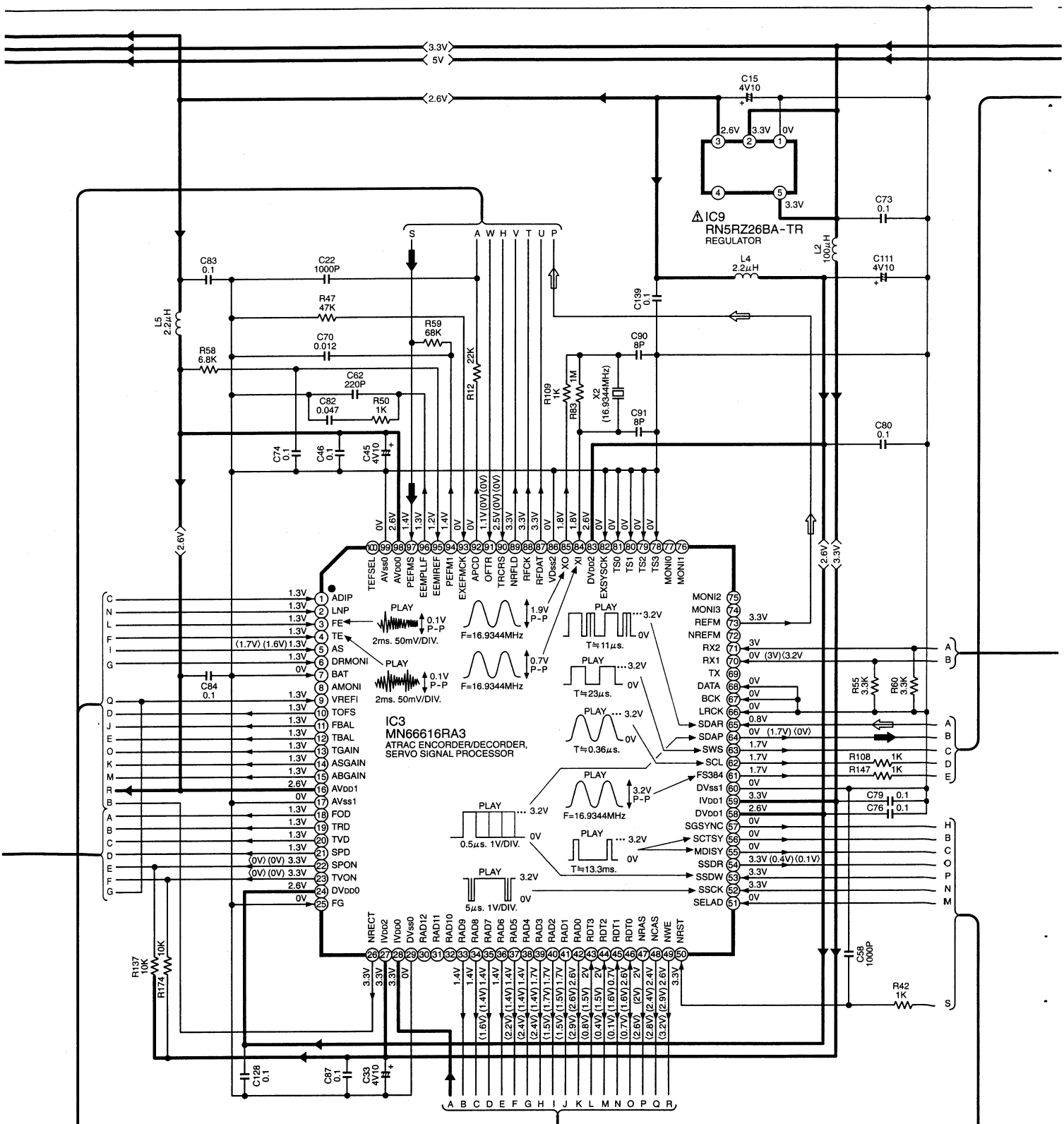
: POSITIVE VOLTAGE LINE



SCHEMATIC DIAGRAM-5

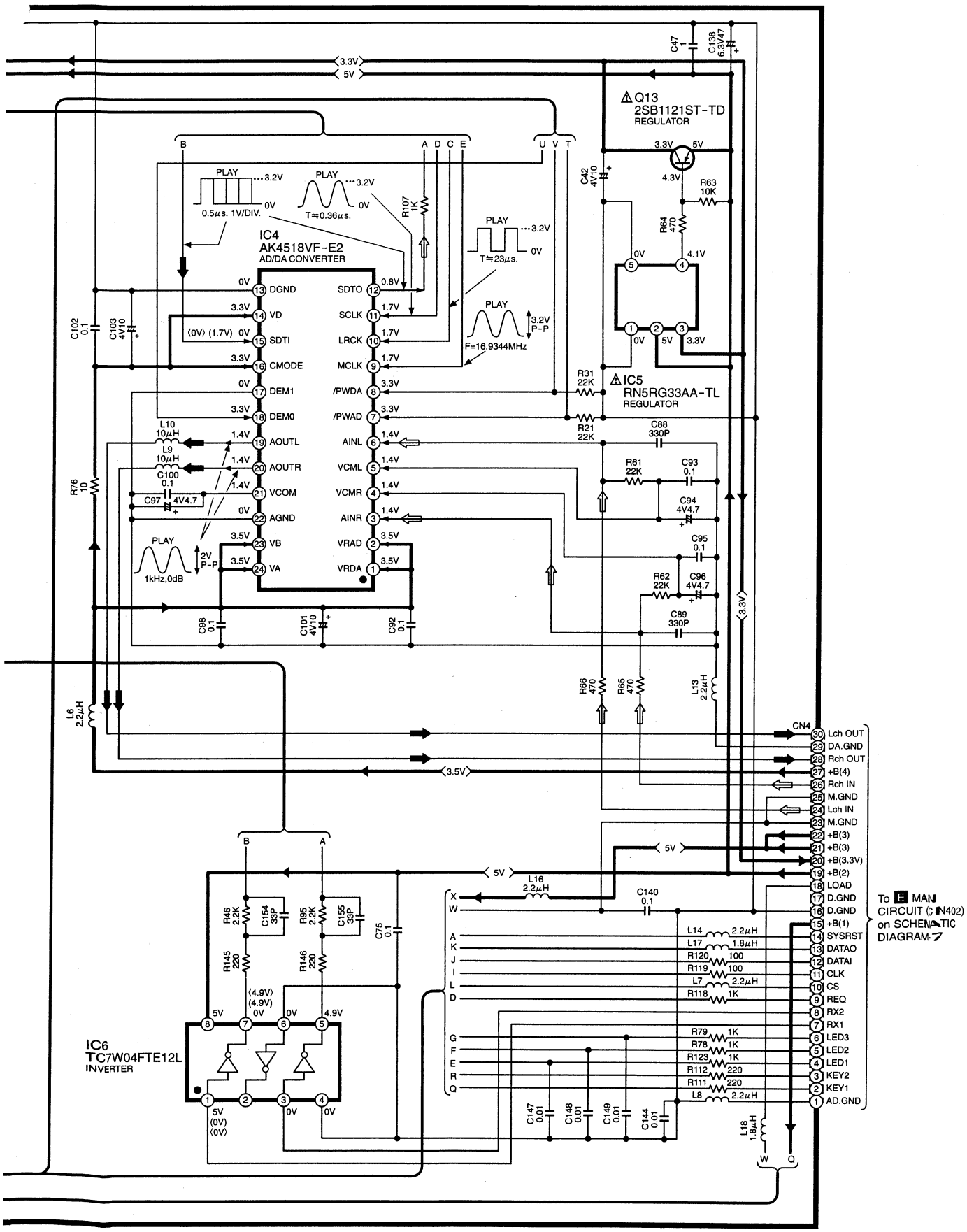
A MD SERVO CIRCUIT

: POSITIVE VOLTAGE LINE : PLAYBACK SIGNAL LINE : RECORDING SIGNAL LINE



SCHEMATIC DIAGRAM-6

: POSITIVE VOLTAGE LINE : PLAYBACK SIGNAL LINE : RECORDING SIGNAL LINE



SCHEMATIC DIAGRAM-7

C SENSOR CIRCUIT

D OPERATION CIRCUIT

: POSITIVE VOLTAGE LINE
: NEGATIVE VOLTAGE LINE
: PLAYBACK SIGNAL LINE
: RECORDING SIGNAL LINE

Z901
RCDGP1U26XD
(REMOTE SENNEOR)

S909
(▲EJECT)

W902

C913
0.1

R913 820
R914 1K
R915 1.2K
R916 1.5K
R917 1.8K
R907 2.2K
R908 3.3K
R909 4.7K

S901 (⏻/I)
S902 (INPUT SELECTOR)
S903 (▼)
S904 (▲)
S905 (EDIT)
S906 (ENTER)
S907 (TRACK MARKING/ CHARA SKIP)
S908 (DISP/ CHARA)

R918 820
R919 1K
R920 1.2K
R921 1.5K
R922 1.8K
R923 2.2K
R925 3.3K
R906 4.7K

S910 (■)
S911 (▲)
S912 (● REC)
S913 (II)
S914 (SYNCHRO REC)
S915 (PLAY MODE)

VR901
(INPUT LEVEL / JOG PUSH SET)

Q906,907
DTA114EUT106
LED DRIVE

Q901
DTA114EUT106
LED DRIVE

Q903-905
DTC114EUT106
FL DRIVE

Q907 Q906 Q902
DTC114EUT106
LED DRIVE

Q903 Q904 Q905

S902
SPR-305MDTF

D903
SLR-325VCT31
(STANDBY)

D904
MA110TX

R910 180
R911 180
R938 470
R903 100K
R904 100K
R905 100K

C908
6.3V220

E MAIN CIRCUIT

C401 0.1
R405 10K
C335 6.3V47
C336 0.1

IC401
TC74HCT7007A
INTERFACE

IC402
TC74HC4050EL
INTERFACE

CN402

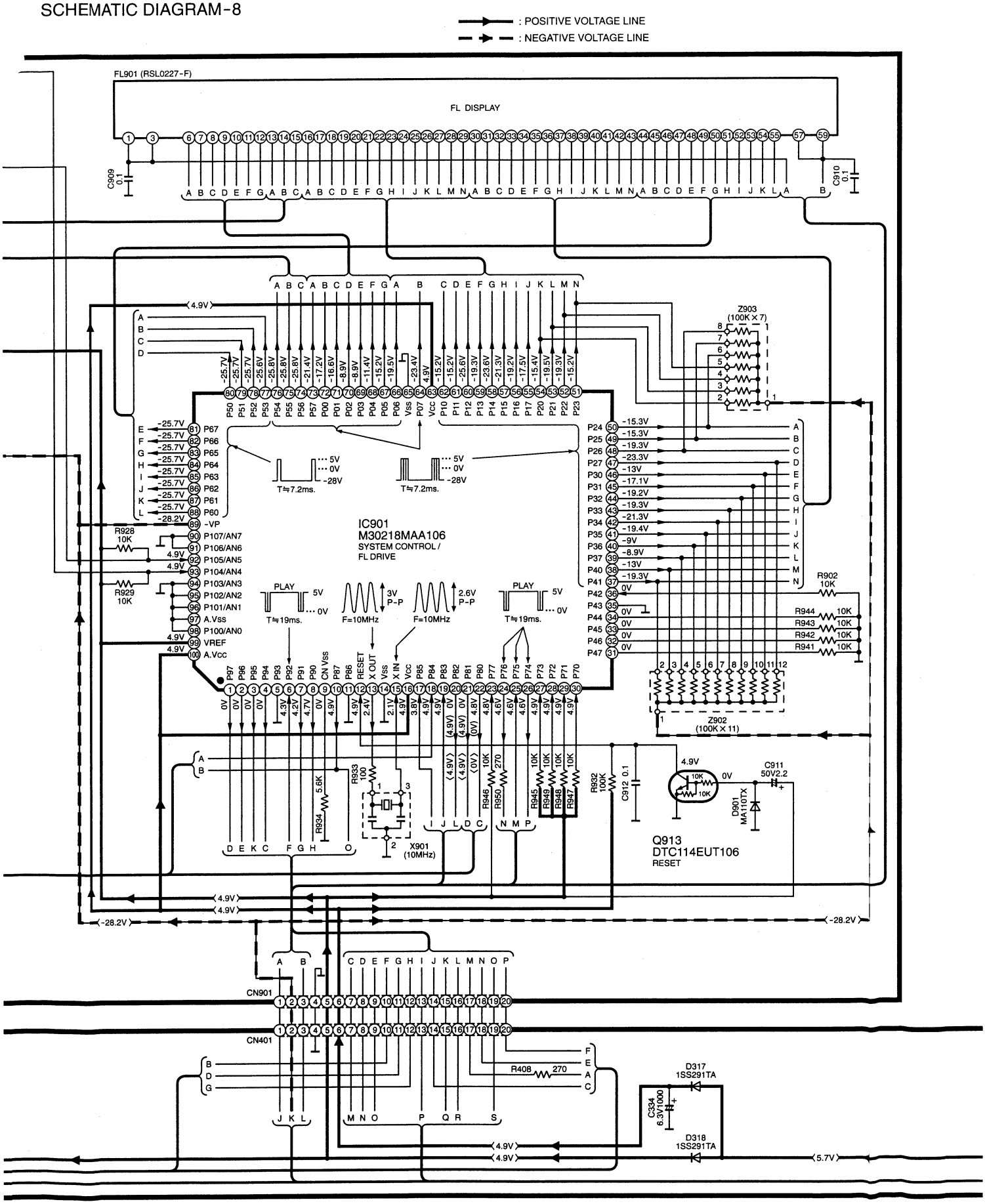
AD.GND
KEY1
KEY2
LED1
LED2
LED3
RX1
RX2
REQ
CS
CLK
DATAI
DATAO
SYS RST
+B (1)
D.GND
D.GND
LOAD
+B (2)
NC
+B (3)
+B (3)
M.GND
Lch OUT
M.GND
Rch OUT
+B (4)
Rch IN
DA.GND
Lch IN

R406 680
R409 680
R407 1K

To A MD SERVO CIRCUIT (CN4) on SCHEMATIC DIAGRAM-6

C402 0.1

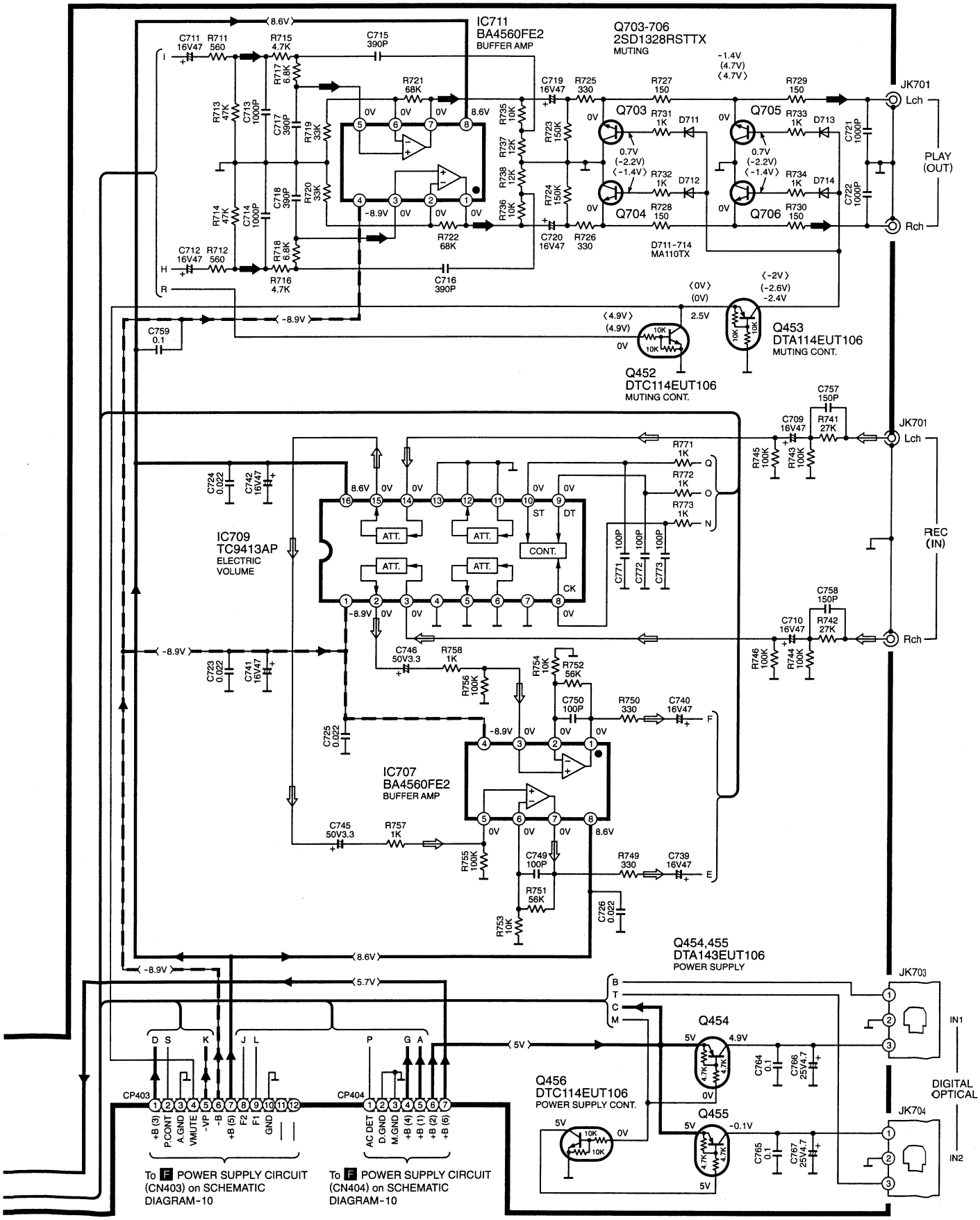
SCHEMATIC DIAGRAM-8



SCHEMATIC DIAGRAM-9

E MAIN CIRCUIT

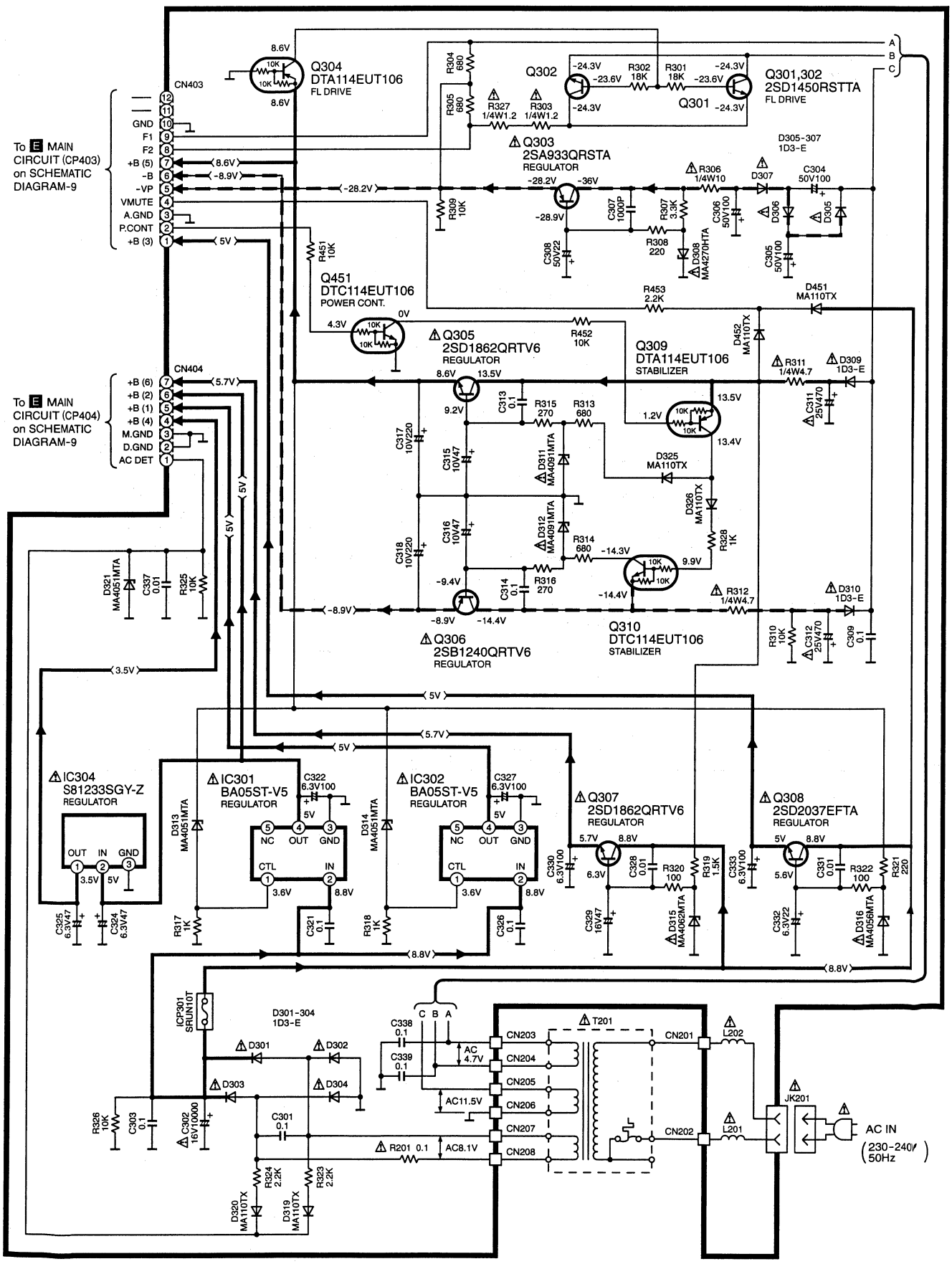
: POSITIVE VOLTAGE LINE
: NEGATIVE VOLTAGE LINE
: PLAYBACK SIGNAL LINE
: RECORDING SIGNAL LINE



SCHEMATIC DIAGRAM-10

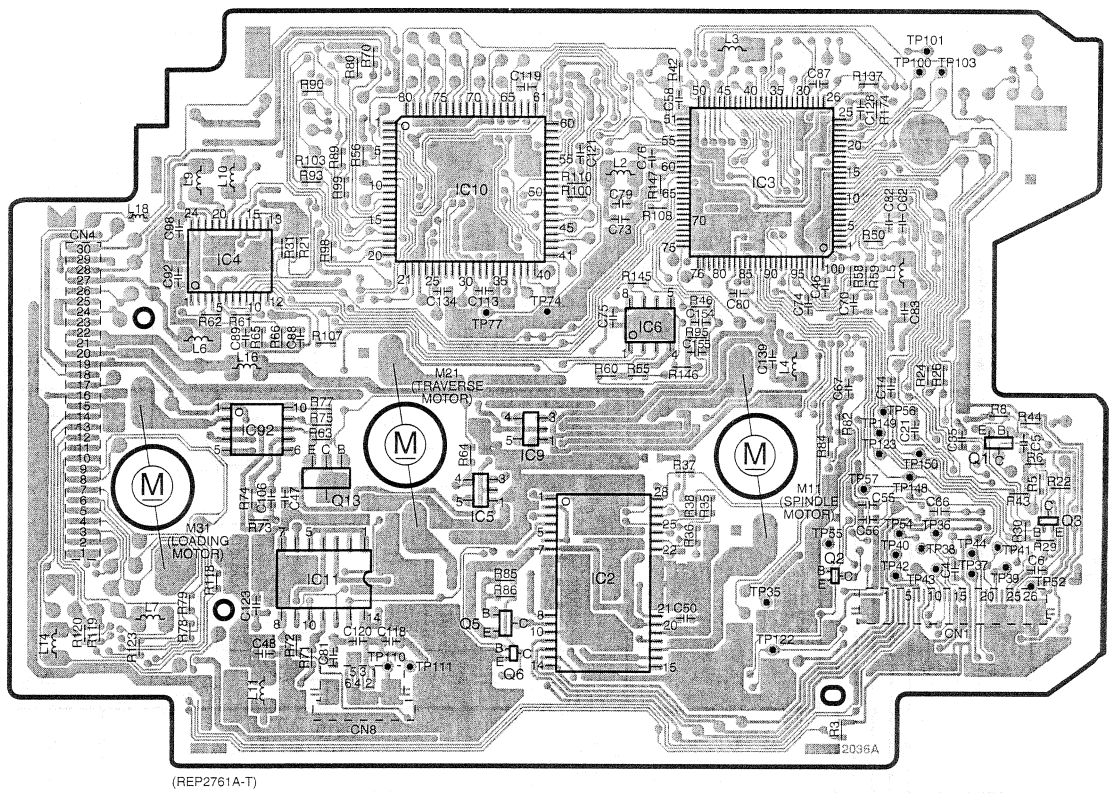
F POWER SUPPLY CIRCUIT

: POSITIVE VOLTAGE LINE
: NEGATIVE VOLTAGE LINE



13 Printed Circuit Board

A MD SERVO P.C.B. (SIDE:A)

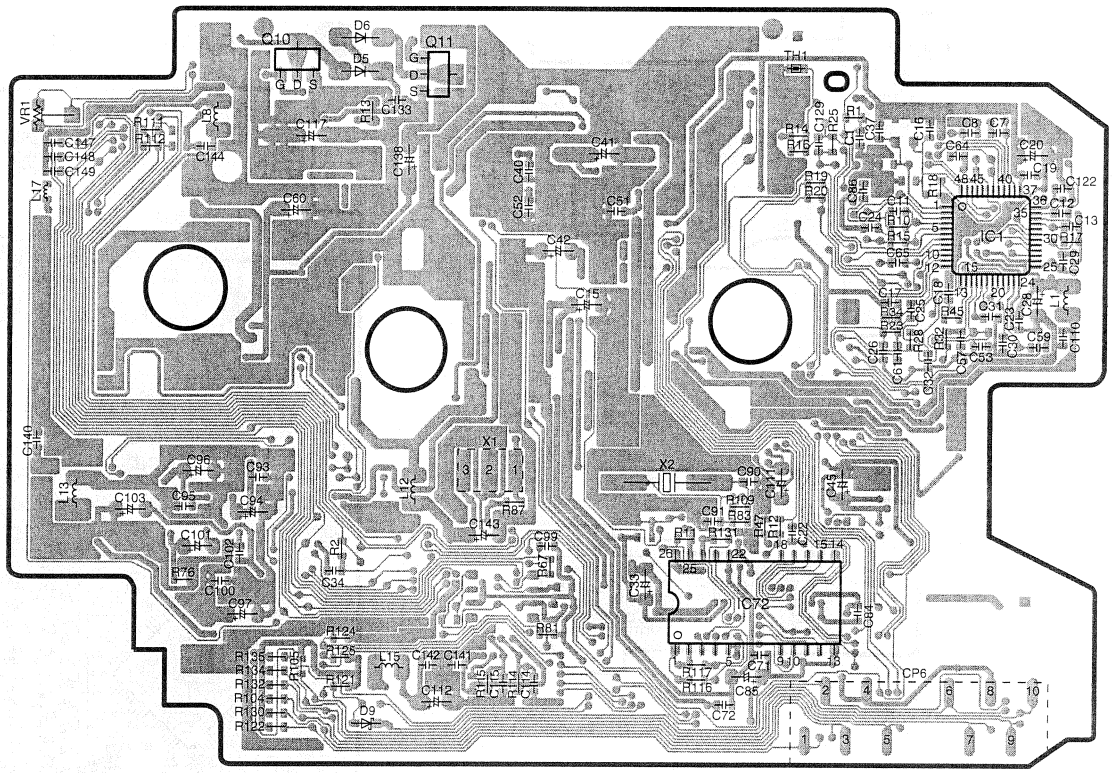


(REP2761A-T)

■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
A MD SERVO P.C.B. (SIDE:A)													
IC2	4D	L14	4A	TP74	3C	R36	4D	R75	3B	R137	2E	C75	3D
IC3	2D	L16	3B	TP77	3C	R37	3D	R77	3B	R145	2D	C76	2D
IC4	2B	L18	2B	TP100	2E	R38	4D	R78	4B	R146	3D	C79	2D
IC5	3C	CN1	4E	TP101	1E	R42	2D	R79	4B	R147	2D	C80	3D
IC6	3D	CN4	3A	TP103	2E	R43	3F	R80	2C	R174	2E	C81	4C
IC9	3C	CN8	4C	TP110	4C	R44	3F	R82	3E	C4	4E	C82	2E
IC10	2C	M11	3D	TP111	4C	R46	3D	R84	3E	C5	3F	C83	3E
IC11	4B	M21	3C	TP122	4E	R50	2E	R85	4C	C6	4F	C87	2E
IC92	3B	M31	3B	TP123	3E	R55	3D	R86	4C	C14	3E	C88	3B
Q1	3F	TP35	4E	TP148	3E	R56	2C	R89	2C	C21	3E	C89	3B
Q2	4E	TP36	4E	TP149	3E	R58	2E	R90	2B	C35	3E	C92	2B
Q3	4F	TP37	4E	TP150	3E	R59	2E	R93	2B	C46	3E	C98	2B
Q5	4C	TP38	4E	R3	5E	R60	3D	R95	3D	C47	4B	C106	4B
Q6	4C	TP39	4F	R5	3F	R61	3B	R98	2B	C48	4B	C113	3C
Q13	3B	TP40	4E	R6	3F	R62	3B	R99	2C	C50	4D	C118	4C
L2	2D	TP41	4F	R8	3F	R63	3B	R100	2D	C55	4E	C119	2C
L3	1D	TP42	4E	R21	2B	R64	3C	R103	2B	C56	4E	C120	4C
L4	3E	TP43	4E	R22	3F	R65	3B	R107	3B	C58	2D	C121	2D
L5	2E	TP44	4E	R24	3E	R66	3B	R108	2D	C62	2E	C123	4B
L6	3B	TP52	4F	R26	3E	R70	1C	R110	2D	C66	4E	C128	2E
L7	4B	TP54	4E	R29	4F	R71	4B	R118	4B	C67	3E	C134	3C
L9	2B	TP55	4E	R30	4F	R72	4B	R119	4A	C70	3E	C139	3E
L10	2B	TP56	3E	R31	2B	R73	4B	R120	4A	C73	2D	C154	3D
L11	4B	TP57	3E	R35	4D	R74	4B	R123	4B	C74	3E	C155	3D

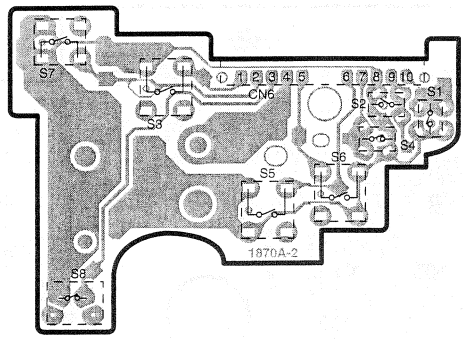
A MD SERVO P.C.B. (SIDE:B)



■ ELECTRICAL PARTS LOCATION

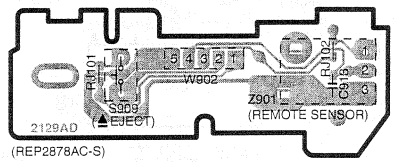
Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
A MD SERVO P.C.B. (SIDE:B)											
IC1	2F	R13	2C	R111	2B	C17	3E	C53	3F	C103	4B
IC72	4D	R14	2E	R112	2B	C18	3E	C57	3E	C110	3F
Q10	1B	R15	2E	R114	4C	C19	2F	C59	3F	C111	3E
Q11	2C	R16	2E	R115	4C	C20	2F	C60	2B	C112	4C
D5	2C	R17	2F	R116	4D	C22	4E	C61	3E	C114	4C
D6	1C	R18	2E	R117	4D	C23	3F	C64	2E	C115	4C
D9	5C	R19	2E	R121	4C	C24	2E	C65	2E	C117	2B
VR1	2A	R20	2E	R122	5B	C25	3E	C71	4E	C122	2F
TH1	2E	R23	3E	R124	4C	C26	3E	C72	4D	C129	2E
L1	3F	R25	2E	R125	4C	C28	3F	C84	4E	C133	2C
L8	2B	R28	3E	R130	5B	C29	2F	C85	4D	C138	2C
L12	3C	R32	3E	R131	4D	C30	3F	C86	2E	C140	3A
L13	3A	R34	3E	R132	4B	C31	3F	C90	3D	C141	4C
L15	4C	R45	3E	R134	4B	C32	3E	C91	4D	C142	4C
L17	2A	R47	4E	R135	4B	C33	4D	C93	3B	C143	4C
X1	3C	R67	4D	C1	2E	C34	4C	C94	4B	C144	2B
X2	3D	R76	4B	C7	2F	C37	2E	C95	4B	C147	2A
CP6	5E	R81	4D	C8	2E	C40	2C	C96	3B	C148	2A
R1	2E	R83	4D	C11	2E	C41	2D	C97	4B	C149	2A
R2	4C	R87	4C	C12	2F	C42	2D	C99	4D		
R10	2E	R104	4B	C13	2F	C45	3E	C100	4B		
R11	4D	R105	4B	C15	3D	C51	2D	C101	4B		
R12	4E	R109	4D	C16	2E	C52	2C	C102	4B		

B SWITCH P.C.B.



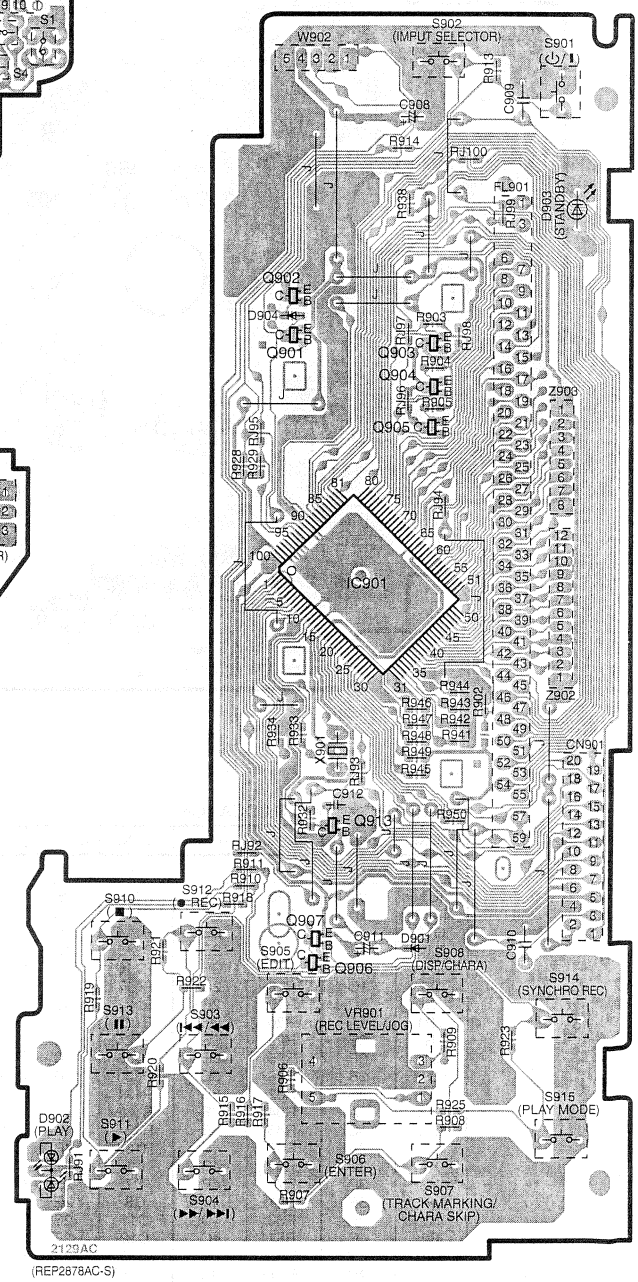
(REP2575A)

C SENSOR P.C.B.



(REP2878AC-S)

D OPERATION P.C.B.

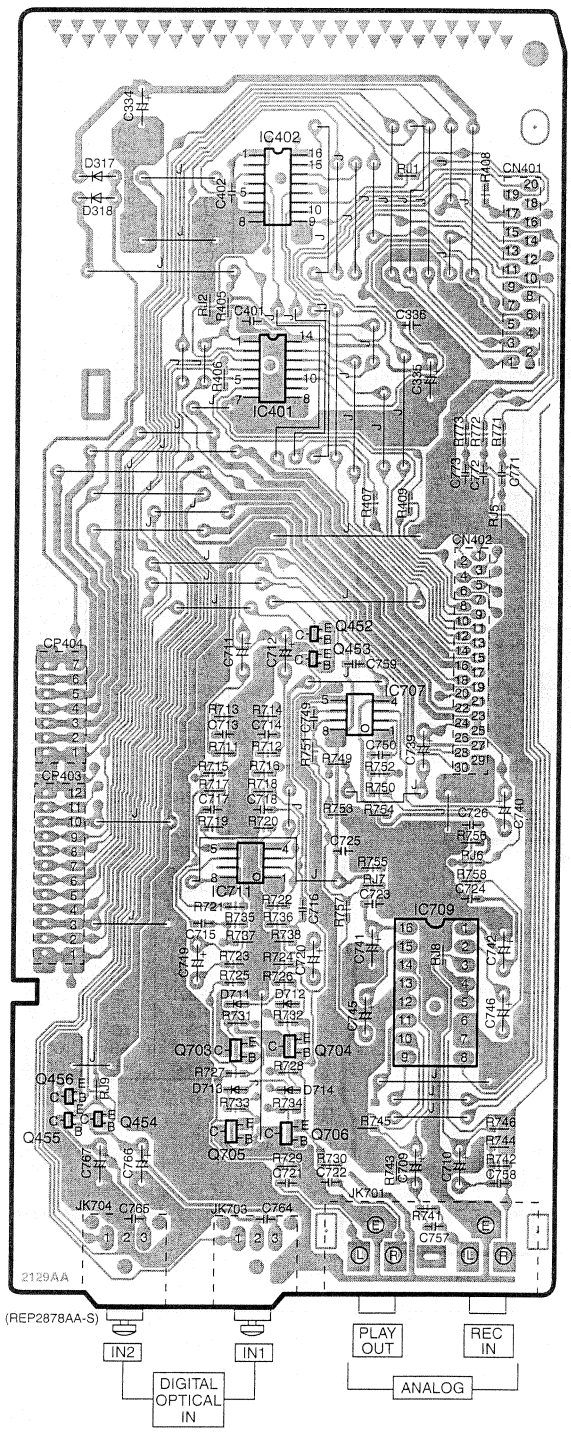


(REP2878AC-S)

■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
B SWITCH P.C.B.					
S1	2C	S4	2C	S7	1B
S2	2C	S5	2C	S8	3B
S3	2B	S6	2C	CN6	2C
C SENSOR P.C.B.					
Z901	4C	W902	4C	RJ101	4B
S909	4B	C913	4C	RJ102	4C
D OPERATION P.C.B.					
IC901	4E	S913	6D	R932	5E
Q901	3E	S914	6F	R933	5E
Q902	3E	S915	7F	R934	5E
Q903	3E	CN901	5F	R938	3E
Q904	3E	W902	2E	R941	5E
Q905	4E	R902	5F	R942	5E
Q906	6E	R903	3E	R943	5E
Q907	6E	R904	3E	R944	5E
Q913	5E	R905	3E	R945	5E
D901	6E	R906	7E	R946	5E
D902	7D	R907	7E	R947	5E
D903	3F	R908	7E	R948	5E
D904	3E	R909	6E	R949	5E
VR901	7E	R910	6D	R950	5E
Z902	4F	R911	6D	RJ91	7D
Z903	4F	R913	2F	RJ92	6D
X901	5E	R914	2E	RJ93	5E
FL901	3F	R915	7D	RJ94	4E
S901	2F	R916	7D	RJ95	4D
S902	2E	R917	7E	RJ96	3E
S903	6D	R918	6D	RJ97	3E
S904	7D	R919	6D	RJ98	3E
S905	6E	R920	7D	RJ99	3F
S906	7E	R921	6D	RJ100	2E
S907	7E	R922	6D	C908	2E
S908	6E	R923	6F	C909	2F
S910	6D	R925	7E	C910	6F
S911	7D	R928	4D	C911	6E
S912	6D	R929	4D	C912	5E

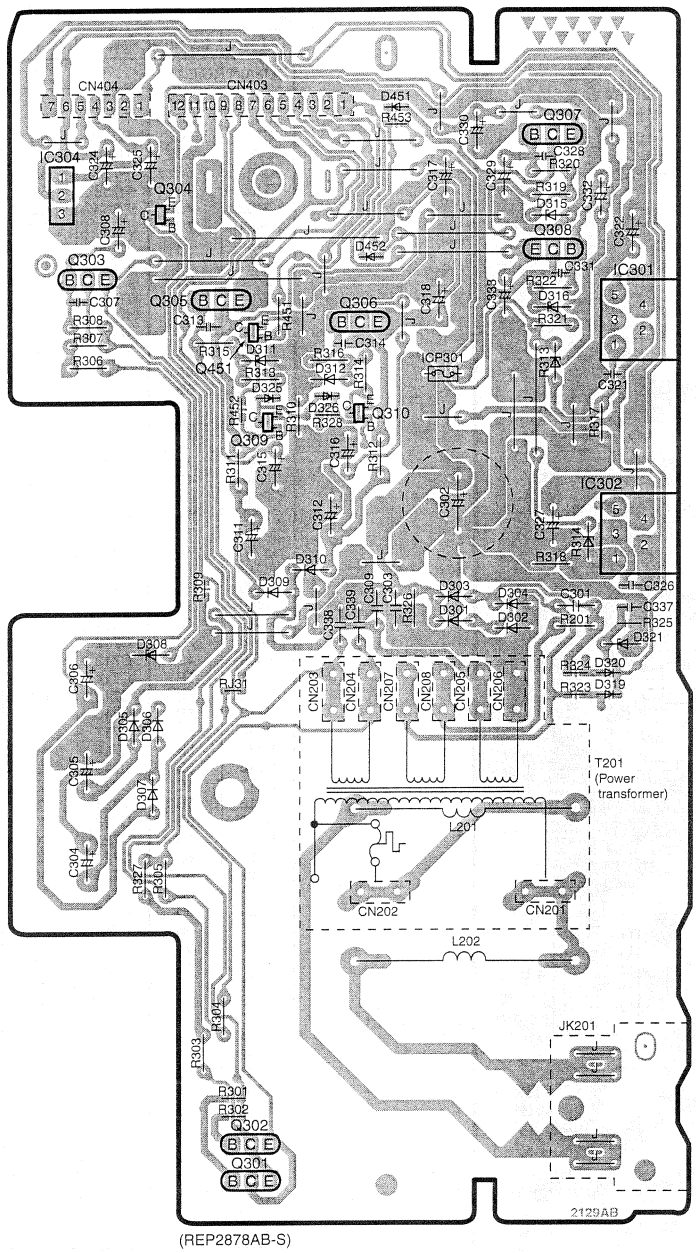
E MAIN P.C.B.



■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.
E MAIN P.C.B.			
IC401	3B	R745	7C
IC402	2B	R746	7C
IC707	5C	R749	5C
IC709	6C	R750	5C
IC711	5B	R751	5B
Q452	4B	R752	5C
Q453	4B	R753	5C
Q454	7B	R754	5C
Q455	7A	R755	5C
Q456	6A	R756	5C
Q703	6B	R757	6C
Q704	6B	R758	5C
Q705	7B	R771	3C
Q706	7B	R772	3C
D317	2A	R773	3C
D318	2A	RJ1	2C
D711	6B	RJ2	3B
D712	6B	RJ5	4C
D713	6B	RJ6	5C
D714	6B	RJ7	5C
CN401	3C	RJ8	6C
CN402	4C	RJ9	6A
CP403	5A	C334	2B
CP404	4A	C335	3C
JK701	7C	C336	3C
JK703	7B	C401	3B
JK704	7B	C402	2B
R405	3B	C709	7C
R406	3B	C710	7C
R407	4C	C711	4B
R408	2C	C712	4B
R409	4C	C713	5B
R711	5B	C714	5B
R712	5B	C715	6B
R713	5B	C716	6B
R714	5B	C717	5B
R715	5B	C718	5B
R716	5B	C719	6B
R717	5B	C720	6B
R718	5B	C721	7B
R719	5B	C722	7C
R720	5B	C723	6C
R721	6B	C724	6C
R722	6B	C725	5C
R723	6B	C726	5C
R724	6B	C739	5C
R725	6B	C740	5C
R726	6B	C741	6C
R727	6B	C742	6C
R728	6B	C745	6C
R729	7B	C746	6C
R730	7C	C749	5B
R731	6B	C750	5C
R732	6B	C757	7C
R733	6B	C758	7C
R734	6B	C759	4C
R735	6B	C764	7B
R736	6B	C765	7B
R737	6B	C766	7B
R738	6B	C767	7A
R741	7C	C771	4C
R742	7C	C772	4C
R743	7C	C773	4C
R744	7C		

F POWER SUPPLY P.C.B.



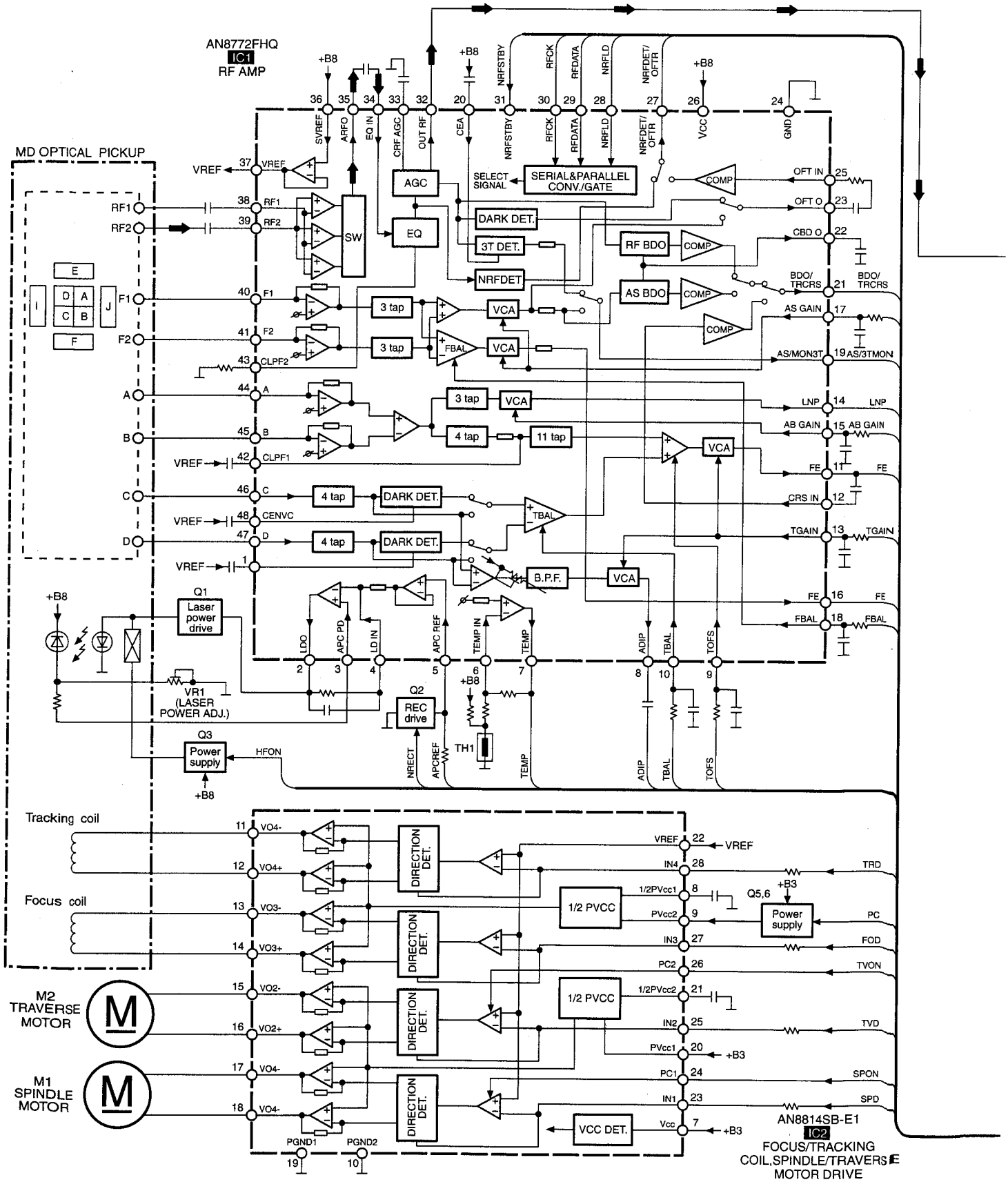
(REP2878AB-S)

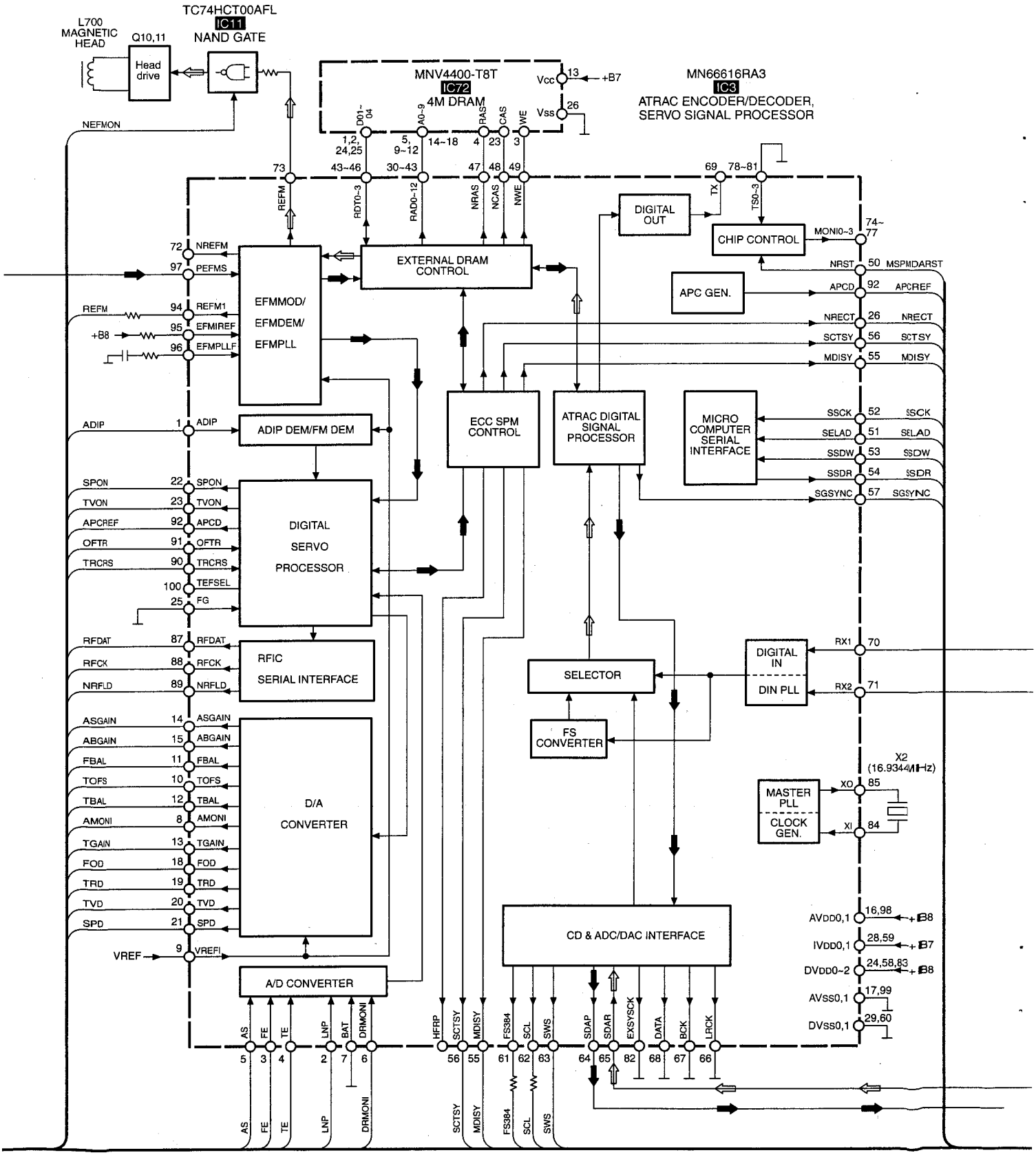
AC IN
(230-240V, 50Hz)

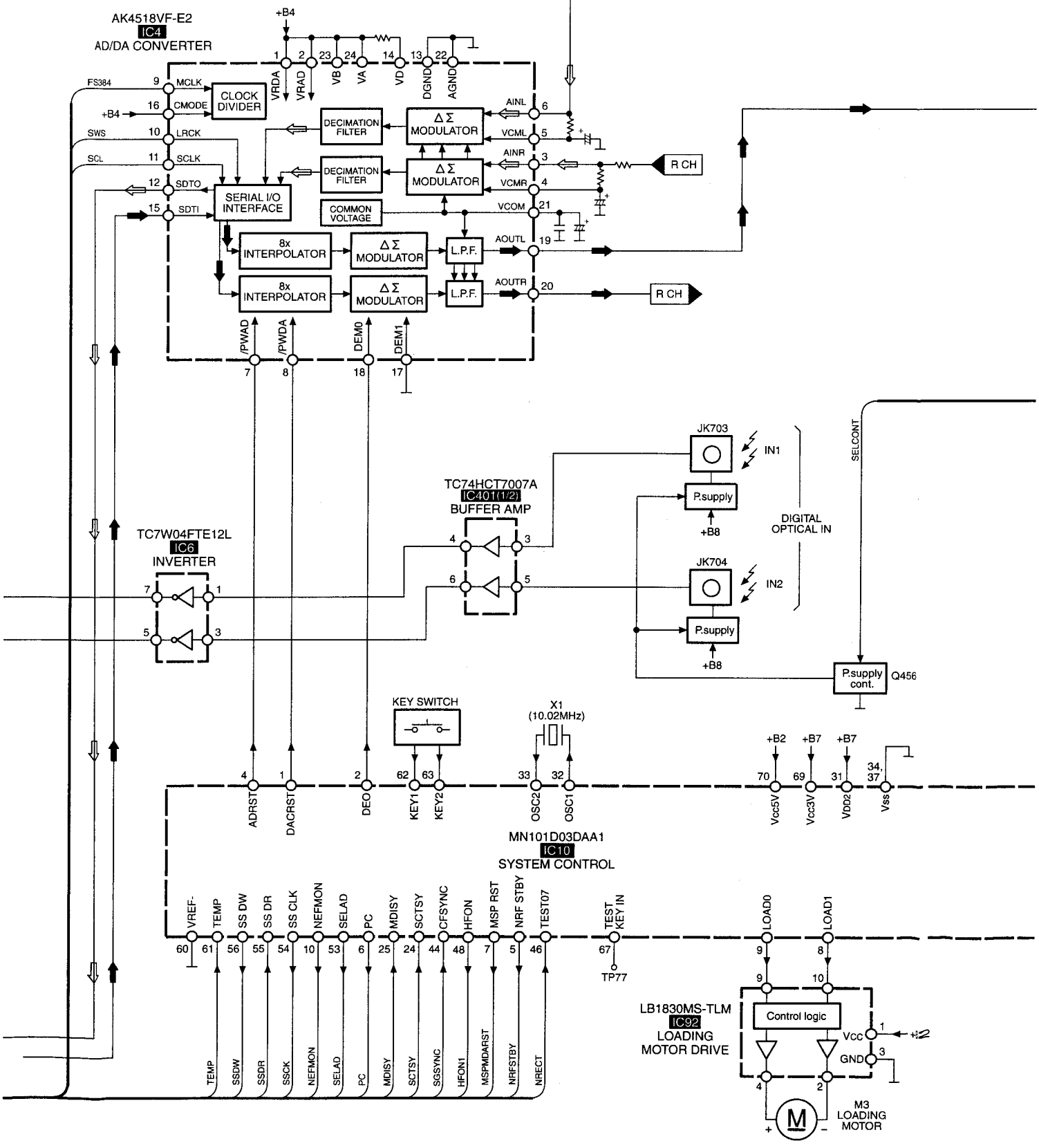
■ ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.
F POWER SUPPLY P.C.B.			
IC301	3D	R306	3A
IC302	4D	R307	3A
IC304	2A	R308	3A
Q301	7B	R309	4B
Q302	7B	R310	3B
Q303	3A	R311	4B
Q304	2B	R312	4C
Q305	3B	R313	3B
Q306	3C	R314	3C
Q307	2D	R315	3B
Q308	3D	R316	3C
Q309	3B	R317	3D
Q310	3C	R318	4D
Q451	3B	R319	2D
D301	4C	R320	2D
D302	4C	R321	3D
D303	4C	R322	3D
D304	4C	R323	5D
D305	5B	R324	5D
D306	5B	R325	4D
D307	5B	R326	4C
D308	4B	R327	6B
D309	4B	R328	3C
D310	4C	R451	3B
D311	3B	R452	3B
D312	3C	R453	2C
D313	3D	C301	4D
D314	4D	C302	4C
D315	2D	C303	4C
D316	3D	C304	5A
D319	5D	C305	5A
D320	5D	C306	5A
D321	4D	C307	5A
D325	3B	C308	3B
D326	3C	C309	4C
D451	2C	C311	4B
D452	3C	C312	4C
ICP301	3C	C313	3B
L201	5C	C314	3C
L202	6C	C315	4B
T201	5C	C316	4C
CN201	6D	C317	2C
CN202	6C	C318	3C
CN203	5C	C321	3D
CN204	5C	C322	3D
CN205	5C	C324	2B
CN206	5C	C325	2B
CN207	5C	C326	4D
CN208	5C	C327	4D
CN403	2B	C328	2D
CN404	2B	C329	2C
JK201	7D	C330	2C
R201	4D	C331	3D
R301	7B	C332	2D
R302	7B	C333	3C
R303	6B	C337	4D
R304	6B	C338	4C
R305	6B	C339	4C

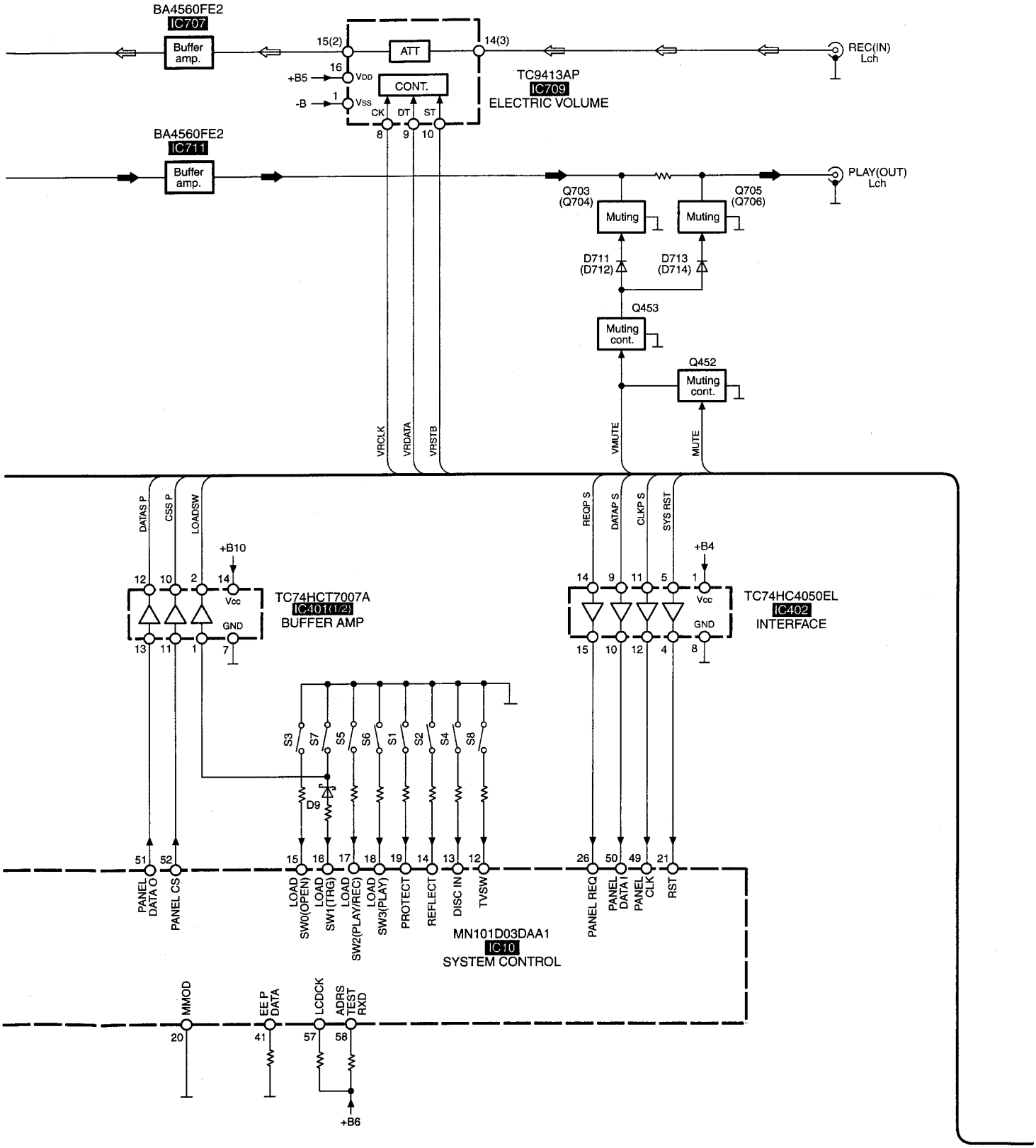
14 Block Diagram

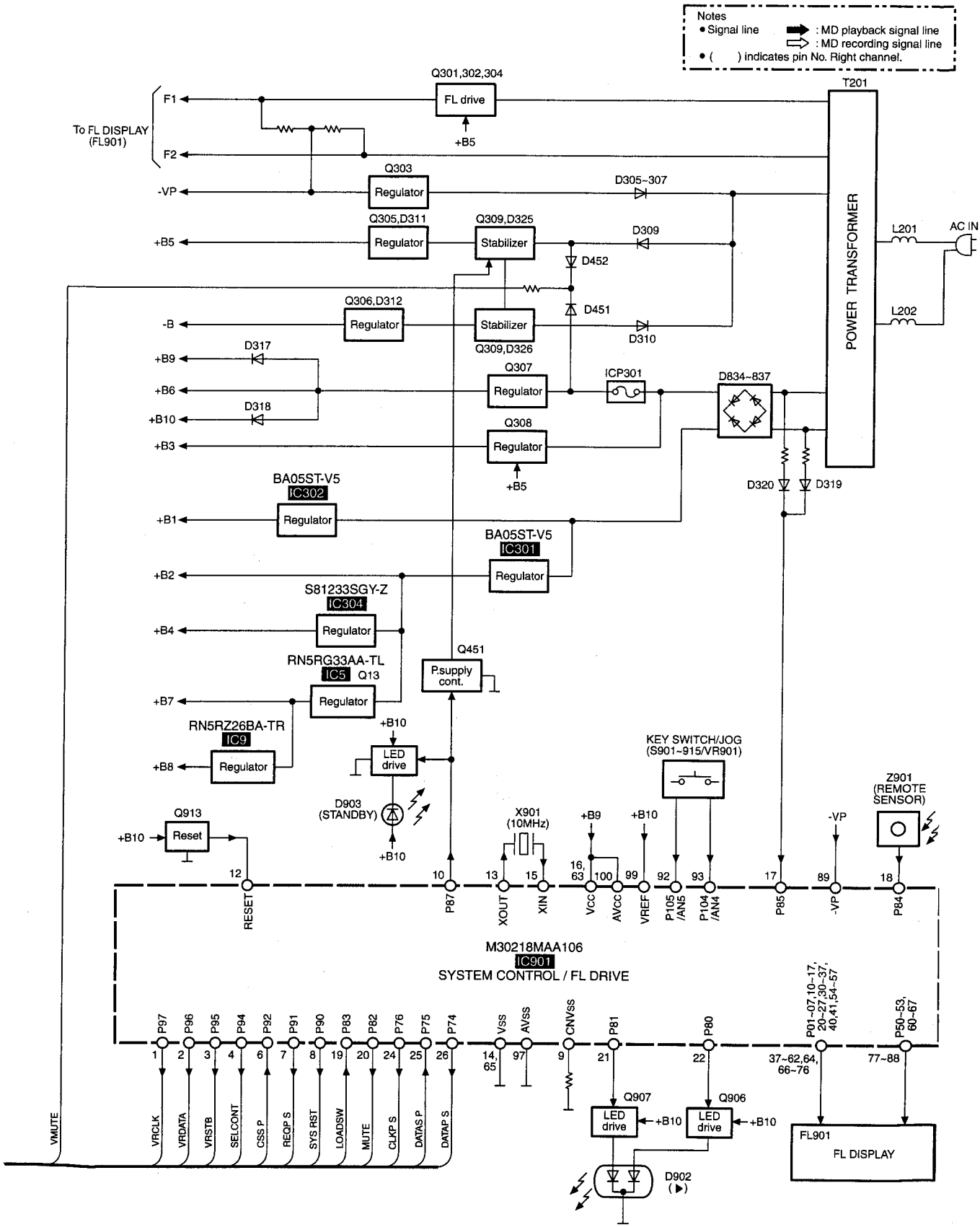



L700
MAGNETIC
HEAD
Q10,11
Head
drive
TC74HCT00AFL
IC11
NAND GATE
NEFMON
MNV4400-T8T
IC72
4M DRAM
Vcc
13
+B7
Vss
26
MN66616RA3
IC3
ATRAC ENCODER/DECODER,
SERVO SIGNAL PROCESSOR
EXTERNAL DRAM
CONTROL
DIGITAL
OUT
CHIP CONTROL
MONI0~3
APC GEN.
EFMMOD/
EFMDEM/
EFMPLL
ADIP DEM/FM DEM
ECC SPM
CONTROL
ATRAC DIGITAL
SIGNAL
PROCESSOR
MICRO
COMPUTER
SERIAL
INTERFACE
DIGITAL
SERVO
PROCESSOR
RFIC
SERIAL INTERFACE
D/A
CONVERTER
A/D CONVERTER
SELECTOR
FS
CONVERTER
DIGITAL
IN
DIN PLL
MASTER
PLL
CLOCK
GEN.
X2
(16.9344MHz)
CD & ADC/DAC INTERFACE
NREFM
PEFMS
REFM1
EFMIREF
EFMPLLF
ADIP
SPON
TVON
APCD
OFTR
TRCRS
TEFSEL
FG
RFDAT
RFCK
NRFLD
ASGAIN
ABGAIN
FBAL
TOFS
TBAL
AMONI
TGAIN
FOD
TRD
TVD
SPD
VREFI
VREF
NRST
MSPMDARST
APCD
APCREF
NRECT
SCTSY
MDISY
SSCK
SELAD
SSDW
SSDR
SGSYNC
RX1
RX2
XO
XI
AVDD0,1
IVDD0,1
DVDD0~2
AVSS0,1
DVSS0,1
+B8
+B7
AS
FE
TE
LNP
BAT
DRMONI
HFRP
FS384
SCL
SWS
SDAP
SDAR
EXSYSCK
DATA
BCK
LRCK

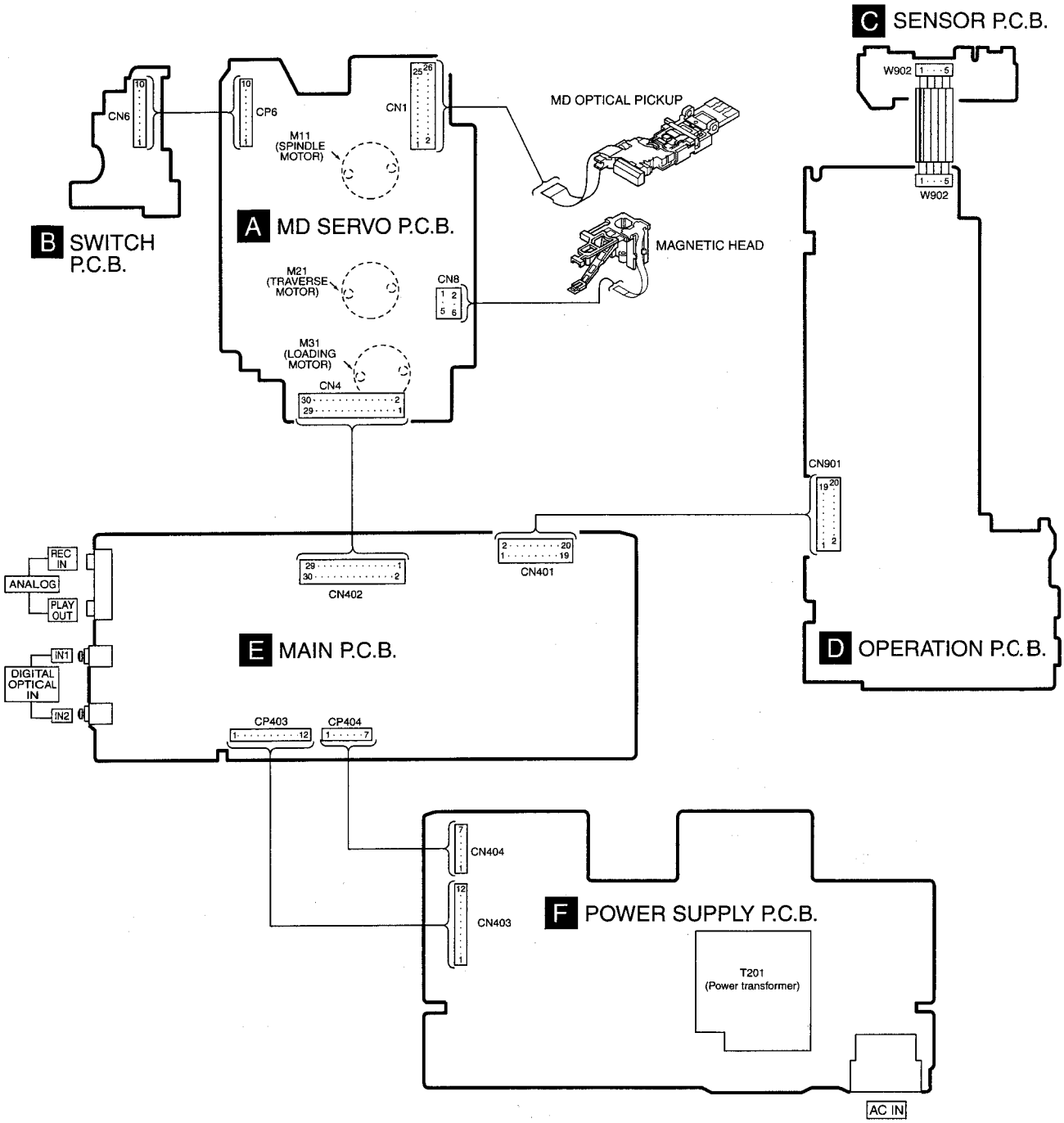

AK4518VF-E2
IC4
AD/DA CONVERTER
+B4
FS384
MCLK
CLOCK DIVIDER
CMODE
SWS
LRCK
SCL
SCLK
SDTO
SDTI
SERIAL I/O INTERFACE
VRDA
VRAD
VB
VA
VD
DGND
AGND
DECIMATION FILTER
ΔΣ MODULATOR
COMMON VOLTAGE
8x INTERPOLATOR
L.P.F.
AINL
AINR
VCML
VCMR
VCOM
AOUTL
AOUTR
R CH
/PWAD
/PWDA
DEM0
DEM1
TC74HCT7007A
IC401(1/2)
BUFFER AMP
TC7W04FTE12L
IC6
INVERTER
JK703
JK704
IN1
IN2
P.supply
+B8
DIGITAL OPTICAL IN
SELCONT
P.supply cont.
Q456
KEY SWITCH
X1
(10.02MHz)
+B2
+B7
ADRST
DACRST
DEO
KEY1
KEY2
OSC2
OSC1
Vcc5V
Vcc3V
VDD2
Vss
MN101D03DAA1
IC10
SYSTEM CONTROL
VREF-
TEMP
SS DW
SS DR
SS CLK
NEFMON
SELAD
PC
MDISY
SCTSY
CFSYNC
HFON
MSP RST
NRF STBY
TEST07
TEST KEY IN
TP77
LOAD0
LOAD1
LB1830MS-TLM
IC92
LOADING MOTOR DRIVE
Control logic
Vcc
GND
+12
M
M3
LOADING MOTOR
SSDW
SSDR
SSCK
SGSYNC
HFON1
MSPMDARST
NRFSTBY
NRECT

J-HD501


BA4560FE2
IC707
Buffer amp.
15(2)
ATT
14(3)
16
+B5
VDD
CONT.
1
-B
VSS
CK
DT
ST
8
9
10
TC9413AP
IC709
ELECTRIC VOLUME
REC(IN) Lch
BA4560FE2
IC711
Buffer amp.
PLAY(OUT) Lch
Q703 (Q704)
Muting
Muting
Q705 (Q706)
D711 (D712)
D713 (D714)
Q453
Muting cont.
Q452
Muting cont.
VRCLK
VRDATA
VRSTB
VMUTE
MUTE
DATAS P
CSS P
LOADSW
+B10
12
10
2
14
Vcc
GND
13
11
1
7
TC74HCT7007A
IC401(1/2)
BUFFER AMP
REQP S
DATAP S
CLKP S
SYS RST
+B4
14
9
11
5
1
Vcc
GND
15
10
12
4
8
TC74HC4050EL
IC402
INTERFACE
S3
S7
S5
S6
S1
S2
S4
S8
D9
51
52
15
16
17
18
19
14
13
12
26
50
49
21
PANEL DATA O
PANEL CS
LOAD SW0(OPEN)
LOAD SW1(TRG)
LOAD SW2(PLAY/REC)
LOAD SW3(PLAY)
PROTECT
REFLECT
DISC IN
TVSW
PANEL REQ
PANEL DATA I
PANEL CLK
RST
MN101D03DAA1
IC10
SYSTEM CONTROL
MMOD
EE P DATA
LCDCK
ADRS TEST RXD
20
41
57
58
+B6


Notes
• Signal line : MD playback signal line
: MD recording signal line
• ( ) indicates pin No. Right channel.
To FL DISPLAY (FL901)
F1
F2
-VP
+B5
-B
+B9
+B6
+B10
+B3
+B1
+B2
+B4
+B7
+B8
Q301,302,304
FL drive
+B5
Q303
Regulator
D305~307
Q305,D311
Regulator
Q309,D325
Stabilizer
D309
D452
D451
Q306,D312
Regulator
Stabilizer
Q309,D326
D310
D317
D318
Q307
Regulator
ICP301
D834~837
Q308
Regulator
+B5
BA05ST-V5
IC302
Regulator
BA05ST-V5
IC301
Regulator
S81233SGY-Z
IC304
Regulator
RN5RG33AA-TL
IC5 Q13
Regulator
RN5RZ26BA-TR
IC9
Regulator
Q451
P.supply cont.
+B10
LED drive
D903 (STANDBY)
+B10
Q913
Reset
+B10
T201
POWER TRANSFORMER
L201
L202
AC IN
D320
D319
KEY SWITCH/JOG (S901~915/VR901)
Z901 (REMOTE SENSOR)
X901 (10MHz)
+B9
+B10
-VP
M30218MAA106
IC901
SYSTEM CONTROL / FL DRIVE
RESET
P87
XOUT
XIN
VCC
AVCC
VREF
P105 /AN5
P104 /AN4
P85
-VP
P84
P97
P96
P95
P94
P92
P91
P90
P83
P82
P76
P75
P74
Vss
AVss
CNVss
P81
P80
P01~07,10~17, 20~27,30~37, 40,41,54~57
P50~53, 60~67
VMUTE
VRCLK
VRDATA
VRSTB
SELCONT
CSS P
REQP S
SYS RST
LOADSW
MUTE
CLKP S
DATAS P
DATAP S
Q907
LED drive
+B10
Q906
LED drive
+B10
D902 (▶)
FL901
FL DISPLAY

15 Wiring Connection Diagram



16 Terminal Function of IC's

16.1. IC1 (AN8772FHQ) : RF AMP

Pin No.	Mark	I/O Division	Function
1	CENVD	—	D signal det. capacitor connection terminal
2	LDO	O	Laser amp output terminal
3	APCPD	I	Photo diode light quantity det. input terminal
4	LD IN	I	Laser amp reverse input terminal
5	APC REF	I	APC amp criterion voltage input terminal

Pin No.	Mark	I/O Division	Function
6	TEMP IN	I	Temperature sensor amp input terminal
7	TEMP	O	Temperature sensor amp output terminal
8	ADIP	O	ADIP signal output terminal
9	TOFS	I	Tracking error offset adjustment terminal
10	TBAL	I	Tracking ballance adjustment terminal

Pin No.	Mark	I/O Division	Function
11	TE	O	Tracking error signal output terminal
12	CRS IN	I	Track cross input terminal
13	TGAIN	I	Tracking gain adjustment input terminal
14	LNP	O	Lens position signal output terminal
15	AB GAIN	I	APP compensation signal gain adjustment terminal
16	FE	O	Focus error signal output terminal
17	AS GAIN	I	AS gain adjustment terminal
18	FBAL	I	Focus ballance adjustment terminal
19	AS/MON3T	O	AS/3TMON signal output terminal
20	CEA	I	3T envelope det. capacitor connection terminal
21	BDO/TRCRS	O	BDO/Track cross signal output terminal
22	CBD O	O	BDO detection capacitor connection terminal
23	OFT O	O	Off track detection signal output terminal
24	GND	—	GND terminal
25	OFT IN	I	Off track detection signal input terminal
26	VCC	I	Power supply terminal (+3V)
27	NRFDET/ OFTR	O	NRFDET/off track signal output terminal
28	NRFLD	I	Serial command latch signal input terminal
29	RF DATA	I	Serial command data signal input terminal
30	RFCK	I	Serial command clock input terminal
31	NRFSTBY	I	Standby control signal input terminal
32	OUT RF	O	EFM signal output terminal
33	CRF AGC	—	RFAGC capacitor connection terminal
34	EQ IN	I	EQ input terminal
35	ARFO	O	RF amp. output terminal
36	SVREF	I	Reference voltage input terminal
37	VREF	O	Reference voltage output terminal
38	RF1	I	RF1 signal input terminal
39	RF2	I	RF2 signal input terminal
40	F1	I	F1 signal input terminal
41	F2	I	F2 signal input terminal
42	CLPF1	—	APP compensation LPF capacitor connection terminal
43	CLPF2	—	RF equalizer adjustment resistor connection terminal
44 ~47	A ~D	I	Beam A~D signal input terminal
48	CENVC	—	Beam E signal detection capacitor connection terminal

16.2. IC2 (AN8814SB-E1) : FOCUS/TRACKING COIL, SPINDLE/TRAVERSE MOTOR DRIVE

Pin No.	Mark	I/O Division	Function
1	REG B	—	3.3V external transistor control terminal (Not used, open)
2	REG M	—	3.3V regular output monitor terminal (Not used, connected to GND)
3	NC	—	Not used, open
4	OPO	O	Op-amp output terminal
5	OP-	O	Op-amp invert output terminal
6	OP+	O	Op-amp non-invert output terminal (Not used, connected to GND)
7	Vcc	I	Power supply terminal
8	1/2 PVcc2	O	1/2 PVcc output terminal 1 (Connected to GND through capacitor)
9	PVcc2	I	Power supply terminal for driver
10	PGND2	—	GND terminal
11	VO4-	O	Tracking coil driver output terminal
12	VO4+	O	Tracking coil driver output terminal
13	VO3-	O	Focus coil driver output terminal
14	VO3+	O	Focus coil driver output terminal
15	VO2-	O	Traverse motor drive output terminal
16	VO2+	O	Traverse motor drive output terminal
17	VO1-	O	Spindle motor drive output terminal
18	VO+	O	Spindle motor drive output terminal
19	PGND	—	GND terminal
20	PVcc1	I	Power supply terminal
21	1/2 PVcc	O	1/2 PVcc output terminal 1 (Connected to GND through capacitor)
22	VREF	I	Reference voltage input
23	IN1	I	Spindle motor drive input terminal
24	PC1	I	Power cut 1 input terminal
25	IN2	I	Traverse motor drive input terminal
26	PC2	I	Power cut 2 input terminal
27	IN3	I	Focus drive input terminal
28	IN4	I	Tracking drive input terminal

16.3. IC3 (M6616RA1) : ATRAC ENCORDER/DECORDER, SERVO SIGNAL PROCESSOR

Pin No.	Mark	I/O Division	Function
1	ADIP	I	ADIP FM signal input terminal
2	LNP	I	Lens position signal input terminal
3	FE	I	Focus error signal input terminal
4	TE	I	Tracking error signal input terminal
5	AS	I	AS signal input terminal
6	DRMONI	I	Drive voltage monitor input terminal
7	BAT	I	Battery power supply terminal (Not used, connected to GND)
8	AMONI	—	Servo analog monitor signal output (Not used, open)
9	VREFI	I	Reference voltage input terminal
10	TOFS	O	Tracking off-set adjustment output terminal
11	FBAL	O	Focus balance adjustment output terminal
12	TBAL	O	Tracking balance adjustment output terminal
13	TGAIN	O	TE error gain adjustment output terminal
14	ASGAIN	O	Main beam amp gain adjustment output terminal
15	ABGAIN	O	APP adjustment output terminal
16	$AV_{DD}1$	I	Power supply terminal
17	$AV_{SS}1$	—	GND terminal
18	FOD	O	Focus drive signal output terminal
19	TRD	O	Tracking drive signal output terminal
20	TVD	O	Traverse motor drive signal output terminal
21	SPD	O	Spindle motor drive signal output terminal
22	SPON	O	Drive IC spindle ON signal output terminal
23	TVON	O	Drive IC traverse ON signal output terminal
24	$DV_{DD}0$	I	Power supply terminal
25	FG	I	FG input terminal

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Pin No.	Mark	I/O Division	Function
26	NRECT	O	Rec/Play switching signal output terminal
27	IVDD2	—	Power supply terminal for I/O pad
28	IVDD0	—	Power supply terminal for I/O pad
29	DVss0	—	GND terminal
30 ~32	RAD12 ~RAD10	—	DRAM address output terminal (Not used, open)
33 ~42	RAD9 ~RAD0	O	DRAM address output terminal
43 ~46	RDT3 ~RDT0	I/O	DRAM data input/output terminal
47	NRAS	O	DRAM row address strobe output terminal
48	NCAS	O	DRAM culum address strobe output terminal
49	NWE	O	DRAM write enable output terminal
50	NRST	I	Reset signal input terminal
51	SELAD	I	MSP/MDA,I/F address select input terminal ("H" Address)
52	SSCK	I	MSP/MDA,I/F clock input terminal
53	SSDW	I	MSP/MDA,I/F write data input terminal
54	SSDR	O	MSP/MDA,I/F read data output terminal
55	MDISY	O	Leader synchronous signal output
56	SCTSY	O	ADIP synchronous noise output terminal
57	SGSYNC	O	Frame synchronous signal output terminal
58	DVDD1	I	Power supply terminal
59	IVDD1	—	Power supply terminal for I/O pad
60	DVss1	—	GND terminal
61	FS384	O	384 Fs output terminal
62	SCL	O	Bit clock output terminal
63	SWS	O	Word clock output terminal
64	SDAP	O	Audio data output terminal
65	SDAR	I	Audio data input terminal
66	LRCK	I	CD word clock input terminal (Connected to GND)
67	BCK	I	CD bit clock input terminal (Connected to GND)
68	DATA	I	CD data input terminal (Connected to GND)
69	TX	O	Digital audio interface signal output terminal (Not used, open)
70	RX1	I	Digital audio interface signal 1 input terminal
71	RX2	I	Digital audio interface signal 2 input terminal
72	NREFM	—	EFM modulation inverted output (Not used, open)
73	REFM	O	EFM modulation output terminal
74	MONI3	—	Monitor signal output (Not used, open)
75	MONI2	—	Monitor signal output (Not used, open)
76	MONI1	—	Monitor signal output (Not used, open)
77	MONI0	—	Monitor signal output (Not used, open)
78	TS3	—	Not used, connected to GND
79	TS2	—	Not used, connected to GND
80	TS1	—	Not used, connected to GND
81	TS0	—	Not used, connected to GND
82	EXSYSCK	—	External system clock input terminal (Not used, connected to GND)
83	DVDD2	I	Power supply terminal
84	XI	I	Crystal oscillator input terminal (F=16.9344MHz)
85	XO	O	Crystal oscillator output terminal (F=16.9344MHz)
86	VDss2	—	GND terminal
87	RFDAT	O	RF serial data output terminal
88	RFCK	O	RF serial clock output terminal
89	NRFLD	O	RF serial load output terminal
90	TRCRS	I	Track cross input terminal
91	OFTR	I	Off-track signal input terminal
92	APCD	O	Laser power PWM output terminal
93	EXEFMCK	I	External FM clock input terminal (Not used, connected to GND through registor)
94	PEFM1	O	EFM loop filter output terminal
95	EFMIREF	I	EFM PLL reference current input terminal
96	EFMPLLF	O	EFM PLL filter output terminal
97	PEFMS	I	EFM signal input terminal
98	$AV_{DD}0$	I	Power supply terminal
99	AVss0	—	GND terminal
100	TEFSEL	—	Not used, open

16.4. IC10 (MN101D03DAA) : SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1	DACRST	O	DAC reset signal output terminal to IC4 ("L":Reset)
2	DEO	O	DE emphasis signal output terminal to IC4("L":DE emphases)
3	MUTE	—	AD-DA mute output terminal (Not used, open)
4	AD RST	O	Reset signal output terminal
5	NRFSTBY	O	Standby control signal output terminal ("L":Standby)
6	PC	O	Transistor drive signal output terminal ("H":Power ON)
7	MSP RST	O	MSP reset signal output terminal ("L":Reset)
8	LOAD1	O	Loading motor drive 1 output terminal
9	LOAD0	O	Loading motor drive 0 output terminal
10	NEFMON	O	Magnetic head current output terminal
11	TEST01	O	Test signal output terminal (Not used, open)
12	TVSW	I	Traverse innermost detection switch signal input terminal
13	DISC IN	I	Disc detection switch signal input terminal
14	REFLECT	I	Reflection rate switch signal input terminal
15	LOAD SW0 (OPEN)	I	Loading mechanism position det. Switch 0 signal input terminal
16	LOAD SW1 (TRG)	I	Loading mechanism position det. Switch 1 signal input terminal
17	LOAD SW2 (PLAY/REC)	I	Loading mechanism position det. Switch 2 signal input terminal.
18	LOAD SW3 (PLAY)	I	Loading mechanism position det. Switch 3 signal input terminal
19	PROTECT	I	Erase prevention switch signal input terminal
20	MMOD	—	Connected to GND
21	RST	I	Reset signal input terminal ("L":Reset)
22	UNIT TEST	I	Test signal input terminal (Open)
23	CS2	I	Test signal input terminal (Open)

Pin No.	Mark	I/O Division	Function
24	SCTSY	I	Micro computer interrupt signal input terminal (SUBQ/ADIP simultaneous signal)
25	MDISY	I	Micro computer interrupt signal input terminal (MD simultaneous signal)
26	PANEL REQ	I	Panel I/F request signal input terminal
27 ~29	LED OUT1 ~LED OUT3	O	Drive signal output terminal to LED DRIVE ("H":LED ON)
30	TEST02	O	Test signal output terminal (Not used, open)
31	V_{DD}2(3V)	I	Power supply terminal (+3V)
32	OSC1	I	Crystal oscillator input terminal (f=10MHz)
33	OSC2	O	Crystal oscillator output terminal (f=10MHz)
34	V_{SS}	—	GND terminal
35	XI	I	Not used, connected to GND
36	XO	O	Not used, open
37	VSS	—	GND terminal
38	TEST03	O	Test signal output terminal (Not used, open)
39	EEPCS	O	EEPROM chip select signal output terminal (Not used, open)
40	EEPCK	O	EEPROM clock signal output terminal (Not used, open)
41	EEPDATA	I/O	EEPROM data in/output terminal (Connected to GND through resistor)
42	TEST04	O	Test signal output terminal (Not used, open)
43	TEST05		
44	CFSYNC	I	ATRACK management frame simultaneous signal input terminal
45	TEST06	O	Test signal output terminal (Not used, open)
46	TEST07	I	Connected to rec/play switch signal
47	TOK OK	O	Not used, open
48	HF ON	—	Drive signal output terminal to Q3 (POWER SUPPLY CONTROL)
49	PANEL CLK	I	Panel I/F clock input terminal
50	PANEL DATA I	I	Panel I/F data input terminal
51	PANEL DATA 0	O	Panel I/F data output terminal
52	PANEL CS	O	Panel I/F chip select output terminal
53	SELAD	O	Micro computer I/F address select output terminal
54	SSCLK	O	Micro computer I/F clock output terminal
55	SSDR	I	Micro computer I/F reading data input terminal
56	SSDW	O	Micro computer I/F writing data output terminal
57	LCDCK	O	LCD clock test signal output terminal (Connected to power supply through resistor)
58	ADRS TEST RXD	O	Test signal output terminal (Connected to power supply through resistor)
59	LCD DATA TXD	O	Test signal output terminal (Not used, open)
60	VREF-	—	Connected to GND
61	TEMP	I	Temprature sensor amp input terminal
62	KEY1	I	Key input 1 terminal
63	KEY2	I	Key input 2 terminal
64	NO LOAD	I	Test signal input terminal ("L":Without loading mechanism) (Open)
65	SRVTEST	I	Test signal input terminal ("L":Servo test mode) (Open)
66	LOAD P	I	Test signal input terminal (Open)
67	TEST KEY IN	I	Test signal input terminal ("L":Unit key mode) (Open)
68	SRV LOAD	I	Test signal input terminal ("L":Using for servo primary values EEPROM)
69	VCC 3V	I	Power supply terminal (+3V)
70	VCC 5V	I	Power supply terminal (+5V)
71	SELADDA	I	AD/DA converter select signal input terminal (Open)
72	SLOCK	O	Spindle lock test signal output terminal (Not used, open)
73	TLOCK	O	Tracking lock signal output terminal ("H":lock) (Not used, open)
74	FLOCK	O	Focus lock test signal output terminal ("H":lock) (Not used, open)
75	ERROR	O	Servo error test signal output terminal (Not used, open)
76	BUSY	O	Servo busy test signal output terminal (Not used, open)
77	SBPRETRY	O	Signal management retry test signal output terminal (Not used, open)
78	SRVRETRY	O	Servo retry test signal output terminal (Not used, open)
79	ARDSKIP	O	Address skip test signal output terminal (Not used, open)
80	SPMWE	O	SPM take in test signal output terminal (Not used, open)

16.5. IC72 (MNV4400-T8T) : 4M DRAM

Pin No.	Mark	I/O Division	Function
1	DO1	I/O	DRAM data 1 in/output terminal
2	DO2	I/O	DRAM data 2 in/output terminal
3	WE	I	DRAM light enable input terminal
4	RAS	I	DRAM low address strobe input terminal
5	A9	I	DRAM address 9 input terminal
9	A0	I	DRAM address 0 input terminal
10 ~12	A1 ~A3	I	DRAM address 1~3 input terminal
13	VCC	I	Power supply terminal
14 ~18	A4 ~A8	I	DRAM address 4~8 input terminal
22	OE	I	DRAM output enable input terminal (Not used, connected to GND)
23	CAS	I	DRAM calam address strobe input terminal
24	DO3	I/O	DRAM data 3 in/output terminal
25	DO4	I/O	DRAM data 4 in/output terminal
26	VSS	—	GND terminal

16.6. IC901 (M30218MAA106): FL DRIVE/SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1	P97	O	VR control clock output terminal
2	P96	O	VR control data output terminal
3	P95	O	VR control STB output terminal
4	P94	O	Digital in 1/2 select signal output terminal ("H": in 1)
5	P93	I	Not used, connected to GND
6	P92	I	Chip select input terminal
7	P91	O	Request signal output terminal
8	P90	O	Reset signal output terminal
9	CNVSS	—	Flash write signal voltage (Connected to GND through resistor)

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Pin No.	Mark	I/O Division	Function
10	P87	O	Power on/off control signal output terminal
11	P86	—	Not used, connected to GND
12	RESET	I	Reset signal input terminal
13	XOUT	O	Clock ceramic oscillator output terminal (f=10MHz)
14	VSS	—	GND terminal
15	XIN	I	Clock ceramic oscillator output terminal (f=10MHz)
16	VCC	I	Power supply terminal
17	P85	I	AC detect terminal
18	P84	I	Remote control data input terminal
19	P83	I	Unit load switch signal input terminal
20	P82	O	Audio mute signal output terminal
21	P81	O	Play LED drive signal output terminal ("L": LED on)
22	P80		
23	P77	I	Not used, connected to power supply through resistor
24	P76	O	Communication clock output terminal
25	P75	I	Data input terminal
26	P74	O	Data output terminal
27 ~30	P73 ~P70	I	Not used, connected to power supply through resistor
31 ~34	P47 ~P44	—	Not used, connected to power supply through resistor
35	P43	—	Not used, connected to GND
36	P42	I	Model select terminal

Pin No.	Mark	I/O Division	Function
37	P41	O	FL segment control signal output terminal
38	P40		
39 ~46	P37 ~P30		
47 ~62	P27 ~P10		
63	VCC	I	Power supply input terminal
64	P07	O	FL segment control signal output terminal
65	VSS	—	GND terminal
66 ~72	P06 ~P00	O	FL segment control signal output terminal
73	P57		
74	P56	O	Q905 drive signal output terminal
75	P55		Q904 drive signal output terminal
76	P54		Q903 drive signal output terminal
77 ~80	P53 ~P50	O	FL grid control signal output terminal
81 ~88	P67 ~60		
89	-VP	I	Power supply input terminal
90	P107/AN7	I	Not used, connected to GND
91	P106/AN6		
92	P105/AN5	I	Key switch input terminal
93	P104/AN4		
94 ~96	P103/AN3 ~P101/AN1	—	Not used, connected to GND
97	AVSS	—	GND terminal
98	P100/AN0	—	Not used, connected to GND
99	VREF	I	Referance voltage input terminal
100	AVCC	I	Power supply input terminal

17 Replacement Parts List

Notes:

*Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
*Warning: This product uses a laser diode. Refer to caution statements.

*ACHTUNG:Die lasereinheit nicht zerlegen.Die lasereinheit darf nur gegen einc vom hersteller spezifizierte einheit ausgetauscht werden.

*Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000K (OHM)

*[MAVD] indicates in Remarks colums parts that are supplied by MAVD.

*The marking <RTL> indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly , and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

*"<IA>", "<IB>", "<IC>", marks in Remarks indicate languages of instruction manuals. [<IA> : English, <IB> : German / Italian / French, <IC> : Netherlands / Danish / Spanish / Swedish / Polish]

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RGK1148-M	SIDE PANEL(L)	1	
2	RGK1149-M	SIDE PANEL(R)	1	
3	RHD30073-K	SCREW	4	
4	RKM0326G-S	CABINET	1	[MAVD]
5	XTBS3+8JFZ1	SCREW	1	
6	REZ1250	FFC(30P)	1	[MAVD]
7	REZ1251	FFC(20P)	1	[MAVD]
8	RKA0076-N3	FOOT	4	
8-1	RKA0083-K	CUSHION	4	
9	XTB3+6G	SCREW	4	
10	RGK0810-N3	SIDE ORNAMENT(L)	1	
11	RGK0811-N3	SIDE ORNAMENT(R)	1	
12	RGK0886-1H	MD LID	1	
13	RGL0345-Q	LED INDICATOR	1	
14	RGG0139C-S	FRONT PANEL	1	[MAVD]
15	RGL0455-Q	INDICATOR	1	[MAVD]
16	RGP0573A-S1	SUB PANEL	1	[MAVD]
17	RGU1471A-S	BUTTON POWER	1	[MAVD]
18	RGU1472-S	BUTTON PLAY	1	
19	RGU1473-S	BUTTON ENTER	1	
20	RGU1474A-S	BUTTON DISPLAY MODE	1	[MAVD]
21	RGU1475-S	BUTTON EJECT	1	
22	RGW0254-S	KNOB JOG	1	
23	RHD20010	SCREW	2	
24	RHD26021	SCREW	5	
25	RHN70002	NUT	1	
26	RKW0482A-Y	FL WINDOW	1	
27	RKW0483-Q	REMOTE SENSOR WINDOW	1	
28	RMB0495	SPRING	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
29	RMG0387A-K	RUBBER	1	
30	XTBR3+20JFZ	SCREW	2	
31	XTBS3+8JFZ1	SCREW	12	
100	RED0047-1	MAGNETIC HEAD	1	
101	RHD17021	SCREW	1	
102	RHD17022	SCREW	1	
103	RMC0348	THRUST SPRING	1	
104	RMC0349	NUT PLATE SPRING	1	
105	RML0515	HEAD SIFTER	1	
106	RMQ0750	REF BASE	1	
107	RMQ0751	NUT PLATE	1	
108	RMS0611	MAIN SHAFT	1	
109	RXJ0021	DRIVE SHAFT	1	
110	RXK0249	MECHANISM CHASSIS	1	
110-1	RDV0055	BELT	1	
110-2	REM0077	TRAVERSE MOTOR	1	
110-3	REM0078	LOADING MOTOR	1	
110-4	RMB0548	PRESSURE SPRING	1	
110-5	RMQ0752	DETECTOR PIN(1)	1	
110-6	RMQ0753	DETECTOR PIN(2)	2	
110-7	XQN17+C25FZ	SCREW	6	
110-8	XYC2+FF105	SCREW	1	
111 ⚠	RAF1700A	OPTICAL PICKUP	1	
112	XTW2+6S	SCREW	1	
113	RHD20053	SCREW	4	
114	RMB0504	SPRING	4	
115	RMG0447-K	DAMPER	4	
116	XTN17+6GFZ	SCREW	1	
117	RMR1118-K2	HOLDER	1	
A1	EUR645272	REMOTE CONTROLLER	1	[MAVD]
A1-1	UR64EC1987B	BATT.COVER(REMOTE CONT.)	1	
A2 ⚠	RJA0044-C	AC POWER SUPPLY CORD	1	(EB)[MAVD]
A2 ⚠	RJA0043-C	AC POWER SUPPLY CORD	1	(EG)
A3	RJL1X001B05D	OPTICAL CABLE	1	
A4	RJL2P004B08A	RCA PIN CORD	2	
A5	RQA0117	WARRANTY CARD	1	
A6	RQCB0169	SERVICENTER LIST	1	
A7	RQT5092-1B	INSTRUCTION MANUAL	1	<IA>[MAVD]
A7	RQT5093-D	INSTRUCTION MANUAL	1	(EG)<IB>[MAVD]
A7	RQT5094-E	INSTRUCTION MANUAL	1	(EG)<IC>[MAVD]
C1	ECUV1H221KBV	50V 220P	1	
C4	ECUVNA105ZFV	10V 1U	1	
C5	ECUVNA224KBV	10V 0.22U	1	
C6	ECUVNA105ZFV	10V 1U	1	
C7,8	ECUVNA224KBV	10V 0.22U	2	
C11	ECUVNE223KBV	25V 0.022U	1	
C12	ECUV0J474KBV	6.3V 0.47U	1	
C13	ECUV1C393KBV	16V 0.039U	1	
C14	ECUV1H102KBV	50V 1000P	1	
C15	ECST0GY106RR	4V 10U	1	
C16	ECUV1H181KV	50V 180P	1	
C17	ECUV1H332KBV	50V 3300P	1	
C18	ECUV1H562KBV	50V 5600P	1	
C19	ECUVNC104ZFV	16V 0.1U	1	
C20	ECST0GY106RR	4V 10U	1	
C21	ECUV1H822KBV	50V 8200P	1	
C22	ECUV1H102KBV	50V 1000P	1	
C23	ECUVNC104ZFV	16V 0.1U	1	
C24	ECUV1H102KBV	50V 1000P	1	
C25	ECUV1C393KBV	16V 0.039U	1	
C26	ECUV1H472KBV	16V 4700P	1	
C28	ECST0GY226RR	4V 22U	1	
C29	ECUV1H332KBV	50V 3300P	1	
C30	ECUV1E123KBV	25V 0.012U	1	
C31,32	ECUV1H102KBV	50V 1000P	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C33	ECST0GY106RR	4V 10U	1	
C34,35	ECUV1H102KBV	50V 1000P	2	
C37	ECUV1H181KV	50V 180P	1	
C40	ECUVNC104ZFV	16V 0.1U	1	
C41	ECEV0JA331P	6.3V 330U	1	
C42	ECST0GY106RR	4V 10U	1	
C45	ECST0GY106RR	4V 10U	1	
C46	ECUVNC104ZFV	16V 0.1U	1	
C47	ECUVNA105ZFV	10V 1U	1	
C48	ECUVNC104ZFV	16V 0.1U	1	
C50	ECUVNC104ZFV	16V 0.1U	1	
C51,52	ECUVNA105ZFV	10V 1U	2	
C53	ECUV1H332KBV	50V 3300P	1	
C55-58	ECUV1H102KBV	50V 1000P	4	
C59	ECUV1C823KBV	16V 0.082U	1	
C60	ECEV1CA100NR	16V 10U	1	
C61	ECUVNJ334KBV	63V 0.33U	1	
C62	ECUV1H221KBV	50V 220P	1	
C64	ECUVNE153KBV	25V 0.015U	1	
C65	ECUVNC104KBV	16V 0.1U	1	
C66	ECUV1C823KBV	16V 0.082U	1	
C67	ECUV1H392KBV	50V 3900P	1	
C70	ECUV1E123KBV	25V 0.012U	1	
C71-76	ECUVNC104ZFV	16V 0.1U	6	
C79,80	ECUVNC104ZFV	16V 0.1U	2	
C81	ECUV1H560JCV	50V 56P	1	
C82	ECUVNC473KBV	16V 0.047U	1	
C83,84	ECUVNC104ZFV	16V 0.1U	2	
C85	ECST0GY106RR	4V 10U	1	
C86	ECUVNE153KBV	25V 0.015U	1	
C87	ECUVNC104ZFV	16V 0.1U	1	
C88,89	ECUV1H331KBV	50V 330P	2	
C90,91	ECUV1H080DCV	50V 8P	2	
C92,93	ECUVNC104ZFV	16V 0.1U	2	
C94	ECST0GY475RR	4V 4.7U	1	
C95	ECUVNC104ZFV	16V 0.1U	1	
C96,97	ECST0GY475RR	4V 4.7U	2	
C98	ECUVNC104ZFV	16V 0.1U	1	
C99	ECUV1H102KBV	50V 1000P	1	
C100	ECUVNC104ZFV	16V 0.1U	1	
C101	ECST0GY106RR	4V 10U	1	
C102	ECUVNC104ZFV	16V 0.1U	1	
C103	ECST0GY106RR	4V 10U	1	
C106	ECUV1H102KBV	50V 1000P	1	
C110	ECUVNC104ZFV	16V 0.1U	1	
C111	ECST0GY106RR	4V 10U	1	
C112	ECEV1CA100NR	16V 10U	1	
C113	ECUVNC104ZFV	16V 0.1U	1	
C114,15	ECUV1H561KBV	50V 560P	2	
C117	ECEV0JA331P	6.3V 330U	1	
C118	ECUVNA105KBN	10V 1U	1	
C119	ECUV1H102KBV	50V 1000P	1	
C120	ECUV1H560JCV	50V 56P	1	
C121	ECUV1H102KBV	50V 1000P	1	
C122	ECUVNA105ZFV	10V 1U	1	
C123	ECUVNC104ZFV	16V 0.1U	1	
C128	ECUVNC104ZFV	16V 0.1U	1	
C129	ECUV1H101JCV	50V 100P	1	
C133	ECUVNA105ZFV	10V 1U	1	
C134	ECUV1H331KBV	50V 330P	1	
C138	ECEV0JA470SR	6.3V 47U	1	
C139-42	ECUVNC104ZFV	16V 0.1U	4	
C143	ECST0GY106RR	4V 10U	1	
C144	ECUVNH103KBV	50V 0.01U	1	
C147-49	ECUVNH103KBV	50V 0.01U	3	
C154,55	ECUV1H330GCV	50V 33P	2	
C301	ECBT1H104ZF5	50V 0.1U	1	
C302 ⚠	ECA1CM103E	16V 1000U	1	
C303	ECBT1H104ZF5	50V 0.1U	1	
C304-06	ECA1HM101	50V 100U	3	
C307	ECUV1H102KCN	50V 1000P	1	
C308	ECEA1HKA220B	50V 22U	1	

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Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C309	ECBT1H104ZF5	50V 0.1U	1	
C311,12 ⚠	ECA1EM471	25V 470U	2	
C313,14	ECUVNE104ZFN	25V 0.1U	2	
C315,16	ECEA1AKS470	10V 47U	2	
C317,18	ECA1AM221B	10V 220U	2	
C321	ECUV1E104KBN	25V 0.1U	1	
C322	ECEA0JKS101	6.3V 100U	1	
C324,25	ECEA0JKS470	6.3V 47U	2	
C326	ECUV1E104KBN	25V 0.1U	1	
C327	ECEA0JKS101	6.3V 100U	1	
C328	ECUV1H103KBN	50V 0.01U	1	
C329	ECEA1CKA470B	16V 47U	1	
C330	ECEA0JKS101	6.3V 100U	1	
C331	ECUV1H103KBN	50V 0.01U	1	
C332	ECEA0JKS220	6.3V 22	1	
C333	ECEA0JKS101	6.3V 100U	1	
C334	ECA0JM102	6.3V 1000U	1	
C335	ECEA0JKS470	6.3V 47U	1	
C336	ECUVNE104ZFN	25V 0.1U	1	
C337	ECUV1H103KBN	50V 0.01U	1	
C338,39	ECUVNE104ZFN	25V 0.1U	2	
C401,02	ECUVNE104ZFN	25V 0.1U	2	
C709-12	ECEA1CKA470B	16V 47U	4	
C713,14	ECUV1H102KCN	50V 1000P	2	
C715-18	ECUV1H391KCN	50V 390P	4	
C719,20	ECEA1CKA470B	16V 47U	2	
C721,22	ECUV1H102KCN	50V 1000P	2	
C723-26	ECUV1E223ZFN	25V 0.022U	4	
C739-42	ECEA1CKA470B	16V 47U	4	
C745,46	ECEA1HKS3R3	50V 3.3U	2	
C749,50	ECUV1H101JCN	50V 100P	2	
C757,58	ECUV1H151JCN	50V 150P	2	
C759	ECUVNE104ZFN	25V 0.1U	1	
C764,65	ECUVNE104ZFN	25V 0.1U	2	
C766,67	ECEA1EKS4R7	25V 4.7U	2	
C771-73	ECUV1H101JCN	50V 100P	3	
C908	ECEA1AKS221	6.3V 220U	1	
C909,10	ECUVNE104ZFN	25V 0.1U	2	
C911	ECEA1HKS2R2	50V 2.2U	1	
C912,13	ECUVNE104ZFN	25V 0.1U	2	
CN1	RJS2A4526T	CONNECTOR (26P)	1	
CN4	RJS2A4830T	CONNECTOR (30P)	1	
CN6	RJU113W10M	SOCKET(10P)	1	
CN8	RJS2A4506T	CONNECTOR (6P)	1	
CN201-08	RJS1A1101T1	CONNECTOR(1P)	8	
CN401	RJS1A6820	CONNECTOR(20P)	1	
CN402	RJS2A3330M	CONNECTOR(30P)	1	
CN403	RJT057W012-1	CONNECTOR(12P)	1	
CN404	RJT057W007-1	CONNECTOR(7P)	1	
CN901	RJS1A6220-1	CONNECTOR(20P)	1	
CP6	RJT113W10M	CONNECTOR (10P)	1	
CP403	RJU057W012	CONNECTOR(12P)	1	
CP404	RJU057W007	CONNECTOR(7P)	1	
D5,6	SC80209TE12R	DIODE	2	
D9	MA728TX	DIODE	1	
D301-07 ⚠	1D3-E	DIODE	7	
D308 ⚠	MA4270H	DIODE	1	
D309,10 ⚠	1D3-E	DIODE	2	
D311,12 ⚠	MA4091M	DIODE	2	
D313,14	MA4051M	DIODE	2	
D315 ⚠	MA4062M	DIODE	1	
D316 ⚠	MA4056M	DIODE	1	
D317,18	1SS291TA	DIODE	2	
D319,20	MA110TX	DIODE	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D321	MA4051M	DIODE	1	
D325,26	MA110TX	DIODE	2	
D451,52	MA110TX	DIODE	2	
D711-14	MA110TX	DIODE	4	
D901	MA110TX	DIODE	1	
D902	SPR-305MDTF	L.E.D.	1	
D903	SLR-325VC	L.E.D.	1	
D904	MA110TX	DIODE	1	
FL901	RSL0227-F	FL DISPLAY	1	
IC1	AN8772FHQ	IC	1	
IC2	AN8814SB-E1	IC	1	
IC3	MN66616RA3	IC	1	
IC4	AK4518VF-E2	IC	1	
IC5 ⚠	RN5RG33AA-TL	IC	1	
IC6	TC7W04FTE12L	IC	1	
IC9 ⚠	RN5RZ26BA-TR	IC	1	
IC10	MN101D03DAA1	IC	1	
IC11	TC74HCT00AFL	IC	1	
IC72	MNV4400-T8T	IC	1	
IC92	LB1830MS-TLM	IC	1	
IC301,02 ⚠	BA05ST-V5	IC	2	
IC304 ⚠	S81233SGY-Z	IC	1	
IC401	TC74HCT7007A	IC	1	
IC402	TC74HC4050EL	IC	1	
IC707	BA4560FE2	IC	1	
IC709	TC9413AP	IC	1	[MAVD]
IC711	BA4560FE2	IC	1	
IC901	M30218MAA106	IC	1	[MAVD]
ICP301 ⚠	SRUN10	IC PROTECTOR	1	
JK201 ⚠	SJS9236	JACK AC INLET	1	
JK701	SJF3069-4N	JACK LINE PLAY/REC	1	
JK703,04	GP1F32R	JACK OPTICAL INPUT	2	
L1	RLQU100KT-W	COIL	1	
L2,3	RLQU101KT-W	COIL	2	
L4-8	RLQU2R2MT-W	COIL	5	
L9-12	RLQU100KT-W	COIL	4	
L13,14	RLQU2R2MT-W	COIL	2	
L15	RLQU100KT-W	COIL	1	
L16	RLQU2R2MT-W	COIL	1	
L17,18	RLQP1R8KT2-Y	COIL	2	
L201,02 ⚠	SLQX400-D	COIL	2	
P1	RPF0139	PROTECTION BAG(F.B.)	1	
P2	RPG4525	PACKING CASE	1	[MAVD]
P3	RPN1008	CUSHION	1	
P4	RPQ0981	PAD	1	[MAVD]
PCB1	REP2878AB-S	POWER P.C.B.	1	<RTL>[MAVD]
PCB2	REP2878AA-S	MAIN P.C.B.	1	<RTL>[MAVD]
PCB3	REP2878AC-S	OPERATION P.C.B.	1	<RTL>[MAVD]
PCB4	REP2761A-T	MD SERVO P.C.B.	1	<RTL>
Q1	2SB1295-6-TB	TRANSISTOR	1	
Q2	DTC114YETL	TRANSISTOR	1	
Q3	2SB1462STX	TRANSISTOR	1	
Q5	2SB1295-6-TB	TRANSISTOR	1	
Q6	DTC114YETL	TRANSISTOR	1	
Q10	2SJ278MYTR	TRANSISTOR	1	
Q11	2SK1764KYTR	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q13 ⚠	2SB1121ST-TD	TRANSISTOR	1	
Q301,02	2SD1450S	TRANSISTOR	2	
Q303 ⚠	2SA1048GR	TRANSISTOR	1	
Q304	DTA114EUT106	TRANSISTOR	1	
Q305 ⚠	2SD1862QRTV6	TRANSISTOR	1	
Q306 ⚠	2SB1240-P	TRANSISTOR	1	
Q307 ⚠	2SD1862QRTV6	TRANSISTOR	1	
Q308 ⚠	2SD2037EFTA	TRANSISTOR	1	
Q309	DTA114EUT106	TRANSISTOR	1	
Q310	DTC114EUT106	TRANSISTOR	1	
Q451,52	DTC114EUT106	TRANSISTOR	2	
Q453	DTA114EUT106	TRANSISTOR	1	
Q454,55	DTA143EUT106	TRANSISTOR	2	
Q456	DTC114EUT106	TRANSISTOR	1	
Q703-06	2SD1328QRSTX	TRANSISTOR	4	
Q901	DTA114EUT106	TRANSISTOR	1	
Q902-05	DTC114EUT106	TRANSISTOR	4	
Q906,07	DTA114EUT106	TRANSISTOR	2	
Q913	DTC114EUT106	TRANSISTOR	1	
R1	ERJ3GEYJ472V	1/16W 4.7K	1	
R2	ERJ3GEYJ102Z	1/16W 1K	1	
R3	ERJ3GEYJ472V	1/16W 4.7K	1	
R5	ERJ3GEYJ1R0V	1/16W 1	1	
R6	ERJ3GEYJ472V	1/16W 4.7K	1	
R8	ERJ3GEYJ271V	1/16W 270	1	
R10	ERJ3GEYJ474V	1/16W 470K	1	
R11	ERJ3GEYJ101V	1/16W 100	1	
R12	ERJ3GEYJ223V	1/16W 22K	1	
R13	ERJ6GEYJ3R3V	1/8W 3.3	1	
R14	ERJ3GEYD103V	1/16W 10K	1	
R15	ERJ3GEYJ223V	1/16W 22K	1	
R16	ERJ3GEYJ104Z	1/16W 100K	1	
R17	ERJ3GEYJ223V	1/16W 22K	1	
R18	ERJ3GEYJ103Z	1/16W 10K	1	
R19	ERJ3GEYJ102Z	1/16W 1K	1	
R20	ERJ3GEYJ473V	1/16W 47K	1	
R21	ERJ3GEYJ223V	1/16W 22K	1	
R22	ERJ3GEY0R00V	1/16W 0	1	
R23	ERJ3GEYJ272V	1/16W 2.7K	1	
R24	ERJ3GEYJ473V	1/16W 47K	1	
R25	ERJ3GEYJ104Z	1/16W 100K	1	
R26	ERJ3GEYJ473V	1/16W 47K	1	
R28,29	ERJ3GEYJ473V	1/16W 47K	2	
R30	ERJ3GEYJ102Z	1/16W 1K	1	
R31	ERJ3GEYJ223V	1/16W 22K	1	
R32	ERJ3GEYJ473V	1/16W 47K	1	
R34	ERJ3GEYJ272V	1/16W 2.7K	1	
R35	ERJ3GEYJ183V	1/16W 18K	1	
R36	ERJ3GEYJ273V	1/16W 27K	1	
R37	ERJ3GEYJ333V	1/16W 33K	1	
R38	ERJ3GEYJ223V	1/16W 22K	1	
R42	ERJ3GEYJ102Z	1/16W 1K	1	
R43	ERJ3GEYJ222V	1/16W 2.2K	1	
R44	ERJ3GEYJ223V	1/16W 22K	1	
R45	ERJ3GEYJ333V	1/16W 33K	1	
R46	ERJ3GEYJ222V	1/16W 2.2K	1	
R47	ERJ3GEYJ473V	1/16W 47K	1	
R50	ERJ3GEYJ102Z	1/16W 1K	1	
R55	ERJ3GEYJ332V	1/16W 3.3K	1	
R56	ERJ3GEYJ223V	1/16W 22K	1	
R58	ERJ3GEYJ682V	1/16W 6.8K	1	
R59	ERJ3GEYJ683V	1/16W 68K	1	
R60	ERJ3GEYJ332V	1/16W 3.3K	1	
R61,62	ERJ3GEYJ223V	1/16W 22K	2	
R63	ERJ3GEYJ103Z	1/16W 10K	1	
R64-66	ERJ3GEYJ471V	1/16W 470	3	
R67	ERJ3GEYJ102Z	1/16W 1K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R70	ERJ3GEYJ102Z	1/16W 1K	1	
R71,72	ERJ3GEYJ220V	1/16W 22	2	
R73	ERJ3GEYJ393V	1/16W 39K	1	
R74	ERJ3GEYJ822V	1/16W 8.2K	1	
R75	ERJ3GEYJ223V	1/16W 22K	1	
R76	ERJ3GEYJ100V	1/16W 10	1	
R77	ERJ3GEYJ223V	1/16W 22K	1	
R78-80	ERJ3GEYJ102Z	1/16W 1K	3	
R81	ERJ3GEYJ223V	1/16W 22K	1	
R82	ERJ3GEYJ473V	1/16W 47K	1	
R83	ERJ3GEYJ105V	1/16W 1M	1	
R84	ERJ3GEYJ153V	1/16W 15K	1	
R85	ERJ3GEYJ223V	1/16W 22K	1	
R86,87	ERJ3GEYJ102Z	1/16W 1K	2	
R89,90	ERJ3GEYJ102Z	1/16W 1K	2	
R93	ERJ3GEYJ102Z	1/16W 1K	1	
R95	ERJ3GEYJ222V	1/16W 2.2K	1	
R98,99	ERJ3GEYJ102Z	1/16W 1K	2	
R100	ERJ3GEYJ473V	1/16W 47K	1	
R103	ERJ3GEYJ102Z	1/16W 1K	1	
R104,05	ERJ3GEYJ272V	1/16W 2.7K	2	
R107-10	ERJ3GEYJ102Z	1/16W 1K	4	
R111,12	ERJ3GEYJ221V	1/16W 220	2	
R114,15	ERJ3GEYJ103Z	1/16W 10K	2	
R116,17	ERJ3GEYJ101V	1/16W 100	2	
R118	ERJ3GEYJ102Z	1/16W 1K	1	
R119,20	ERJ3GEYJ101V	1/16W 100	2	
R121,22	ERJ3GEYJ272V	1/16W 2.7K	2	
R123	ERJ3GEYJ102Z	1/16W 1K	1	
R124,25	ERJ3GEYJ473V	1/16W 47K	2	
R130	ERJ3GEYJ272V	1/16W 2.7K	1	
R131	ERJ3GEYJ101V	1/16W 100	1	
R132	ERJ3GEYJ272V	1/16W 2.7K	1	
R134,35	ERJ3GEYJ272V	1/16W 2.7K	2	
R137	ERJ3GEYJ103Z	1/16W 10K	1	
R145,46	ERJ3GEYJ221V	1/16W 220	2	
R147	ERJ3GEYJ102Z	1/16W 1K	1	
R174	ERJ3GEYJ103Z	1/16W 10K	1	
R201 ⚠	ERQ16NKWR10E	1/6W 0.1	1	
R301,02	ERJ6GEYJ183V	1/10W 18K	2	
R303 ⚠	ERDS2FJ1R2	1/4W 1.2	1	
R304,05	ERDS2FJ681	1/4W 680	2	
R306 ⚠	ERD2FCG100	1/4W 10	1	
R307	ERDS2FJ332	1/4W 3.3K	1	
R308	ERDS2FJ221	1/4W 220	1	
R309,10	ERJ6GEYJ103V	1/10W 10K	2	
R311,12 ⚠	ERD2FCJ4R7	1/4W 4.7	2	
R313,14	ERDS2FJ681	1/4W 680	2	
R315,16	ERDS2FJ271	1/4W 270	2	
R317,18	ERDS2FJ102	1/4W 1K	2	
R319	ERDS2FJ152	1/4W 1.5K	1	
R320	ERDS2FJ101	1/4W 100	1	
R321	ERDS2FJ221	1/4W 220	1	
R322	ERDS2FJ101	1/4W 100	1	
R323,24	ERJ6GEYJ222V	1/10W 2.2K	2	
R325	ERJ6GEYJ103V	1/10W 10K	1	
R326	ERDS2FJ103	1/4W 10K	1	
R327 ⚠	ERDS2FJ1R2	1/4W 1.2	1	
R328	ERJ6GEYJ102Z	1/10W 1K	1	
R405	ERJ6GEYJ103V	1/10W 10K	1	
R406	ERJ6GEYJ681V	1/10W 680	1	
R407	ERJ6GEYJ102Z	1/10W 1K	1	
R408	ERJ6GEYJ271V	1/10W 270	1	
R409	ERJ6GEYJ681V	1/10W 680	1	
R451	ERDS2FJ102	1/4W 1K	1	
R452	ERJ6GEYJ103V	1/10W 10K	1	
R453	ERJ6GEYJ222V	1/10W 2.2K	1	
R711,12	ERJ6GEYJ561V	1/10W 560	2	
R713,14	ERJ6GEYJ473V	1/10W 47K	2	

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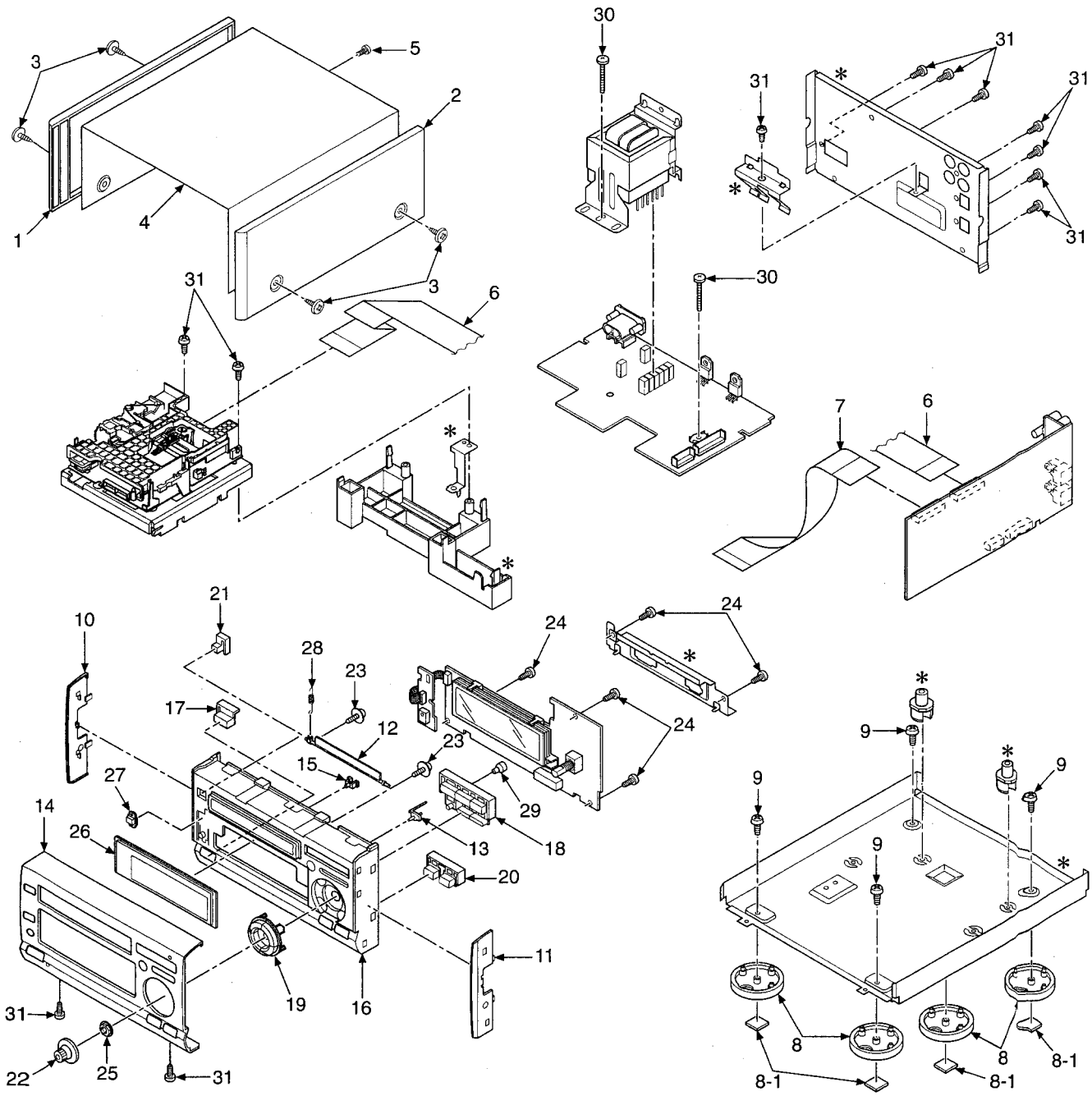
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R715,16	ERJ6GEYJ472V	1/10W 4.7K	2	
R717,18	ERJ6GEYJ682V	1/10W 6.8K	2	
R719,20	ERJ6GEYJ333V	1/10W 33K	2	
R721,22	ERJ6GEYJ683V	1/10W 68K	2	
R723,24	ERJ6GEYJ154V	1/10W 150K	2	
R725,26	ERJ6GEYJ331V	1/10W 330	2	
R727-30	ERJ6GEYJ151V	1/10W 150	4	
R731-34	ERJ6GEYJ102Z	1/10W 1K	4	
R735,36	ERJ6GEYJ103V	1/10W 10K	2	
R737,38	ERJ6GEYJ123V	1/10W 12K	2	
R741,42	ERJ6GEYJ273V	1/10W 27K	2	
R743-46	ERJ6GEYJ104V	1/10W 100K	4	
R749,50	ERJ6GEYJ331V	1/10W 330	2	
R751,52	ERJ6GEYJ563V	1/10W 56K	2	
R753,54	ERJ6GEYJ103V	1/10W 10K	2	
R755,56	ERJ6GEYJ104V	1/10W 100K	2	
R757,58	ERJ6GEYJ102Z	1/10W 1K	2	
R771-73	ERJ6GEYJ102Z	1/10W 1K	3	
R902	ERJ6GEYJ103V	1/10W 10K	1	
R903-05	ERJ6GEYJ104V	1/10W 100K	3	
R906	ERJ6GEYJ472V	1/10W 4.7K	1	
R907	ERJ6GEYJ222V	1/10W 2.2K	1	
R908	ERJ6GEYJ332V	1/10W 3.3K	1	
R909	ERJ6GEYJ472V	1/10W 4.7K	1	
R910,11	ERJ6GEYJ181V	1/19W 180	2	
R913	ERJ6GEYJ821V	1/10W 820	1	
R914	ERJ6GEYJ102Z	1/10W 1K	1	
R915	ERJ6GEYJ122V	1/10W 1.2K	1	
R916	ERJ6GEYJ152V	1/10W 1.5K	1	
R917	ERJ6GEYJ182V	1/10W 1.8K	1	
R918	ERJ6GEYJ821V	1/10W 820	1	
R919	ERJ6GEYJ102Z	1/10W 1K	1	
R920	ERJ6GEYJ122V	1/10W 1.2K	1	
R921	ERJ6GEYJ152V	1/10W 1.5K	1	
R922	ERJ6GEYJ182V	1/10W 1.8K	1	
R923	ERJ6GEYJ222V	1/10W 2.2K	1	
R925	ERJ6GEYJ332V	1/10W 3.3K	1	
R928,29	ERJ6GEYJ103V	1/10W 10K	2	
R932	ERJ6GEYJ104V	1/10W 100K	1	
R933	ERJ6GEYJ101V	1/10W 100	1	
R934	ERJ6GEYJ562V	1/10W 5.6K	1	
R938	ERJ6GEYJ471V	1/10W 470	1	
R941-49	ERJ6GEYJ103V	1/10W 10K	9	
R950	ERJ6GEYJ271V	1/10W 270	1	
RJ1,2	ERJ6GEY0R00	1/10W 0	2	
RJ5-9	ERJ6GEY0R00	1/10W 0	5	
RJ31	ERJ6GEY0R00	1/10W 0	1	
RJ91-102	ERJ6GEY0R00	1/10W 0	12	
S1,2	RSH1A91ZA-A	SW PROTECT/REFLECT	2	
S3	RSH1A044-1A	SW.LOAD OPEN	1	
S4	RSH1A91ZA-A	SW DISC IN	1	
S5,6	RSH1A044-1A	SW LOAD PLAY/REC	2	
S7	RSH1A045-A	SW LOAD TRG	1	
S8	RSP1A023-A	SW,TV	1	
S901-15	EVQ21405R	SW PUSH	15	
T201 ⚠	RTP1K4B034-V	POWER TRANSFORMER	1	[MAVD]
TH1	RRSP33J103CW	THERMISTOR	1	
VR1	EVM3YSX50B14	VR LASER POWER ADJ.	1	
VR901	RRV11B152A-A	VR ENCODER	1	
X1	RSXY10M0M02T	OSCILLATOR	1	
X2	RSXC16M9S03T	OSCILLATOR	1	
X901	EF0MC1005L4	CERALOCK ELEMENT	1	[MAVD]
Z901	RCDGP1U26XD	REMOTE SENSOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Z902	EXBZ12E104J	COMPONENT COMBINATION	1	
Z903	EXBZ8E104J	COMPONENT COMBINATION	1	

18 Cabinet Parts Location

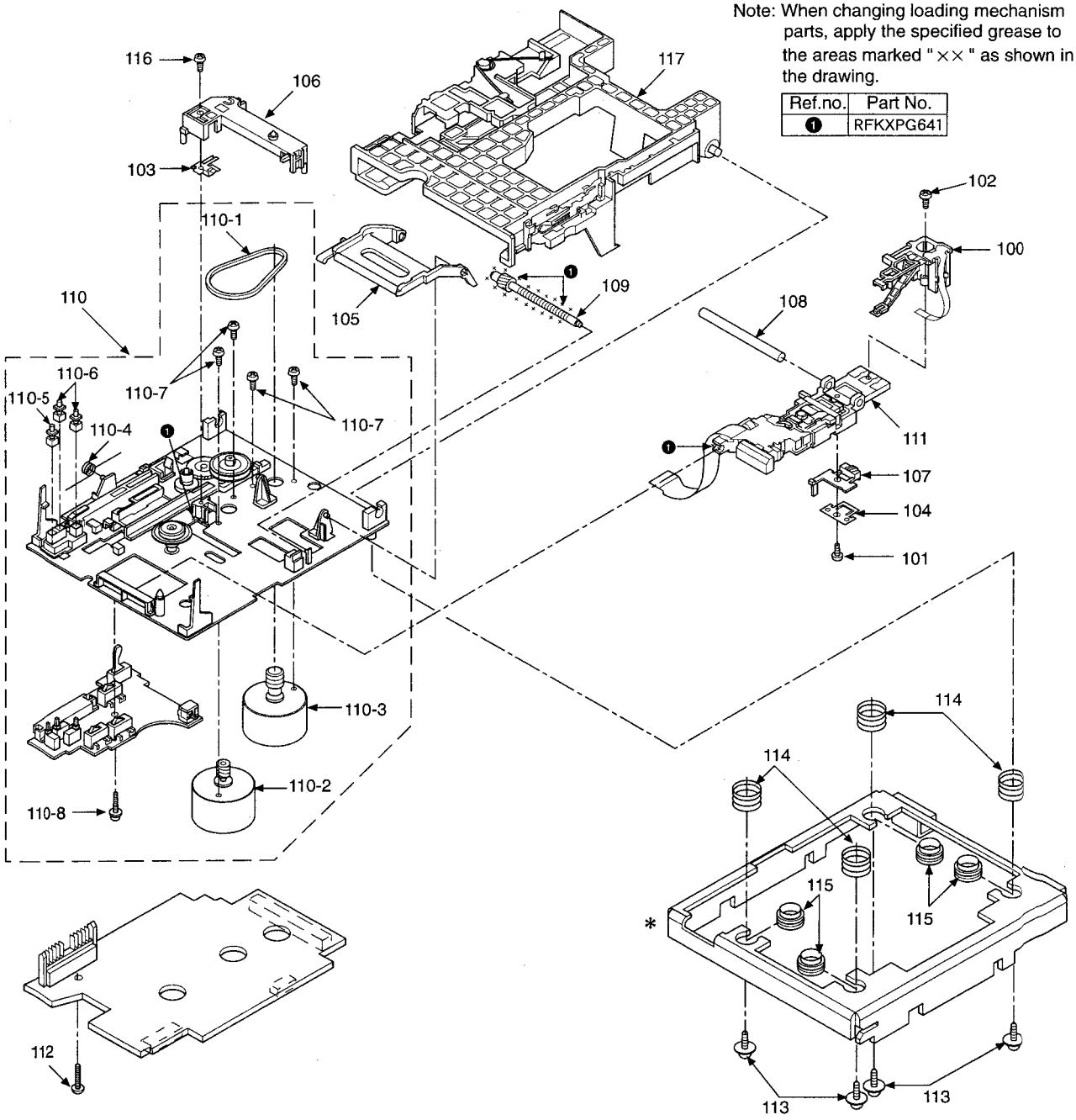


Note: We do not supply those items of parts marked *.

19 MD Mechanism Parts Location

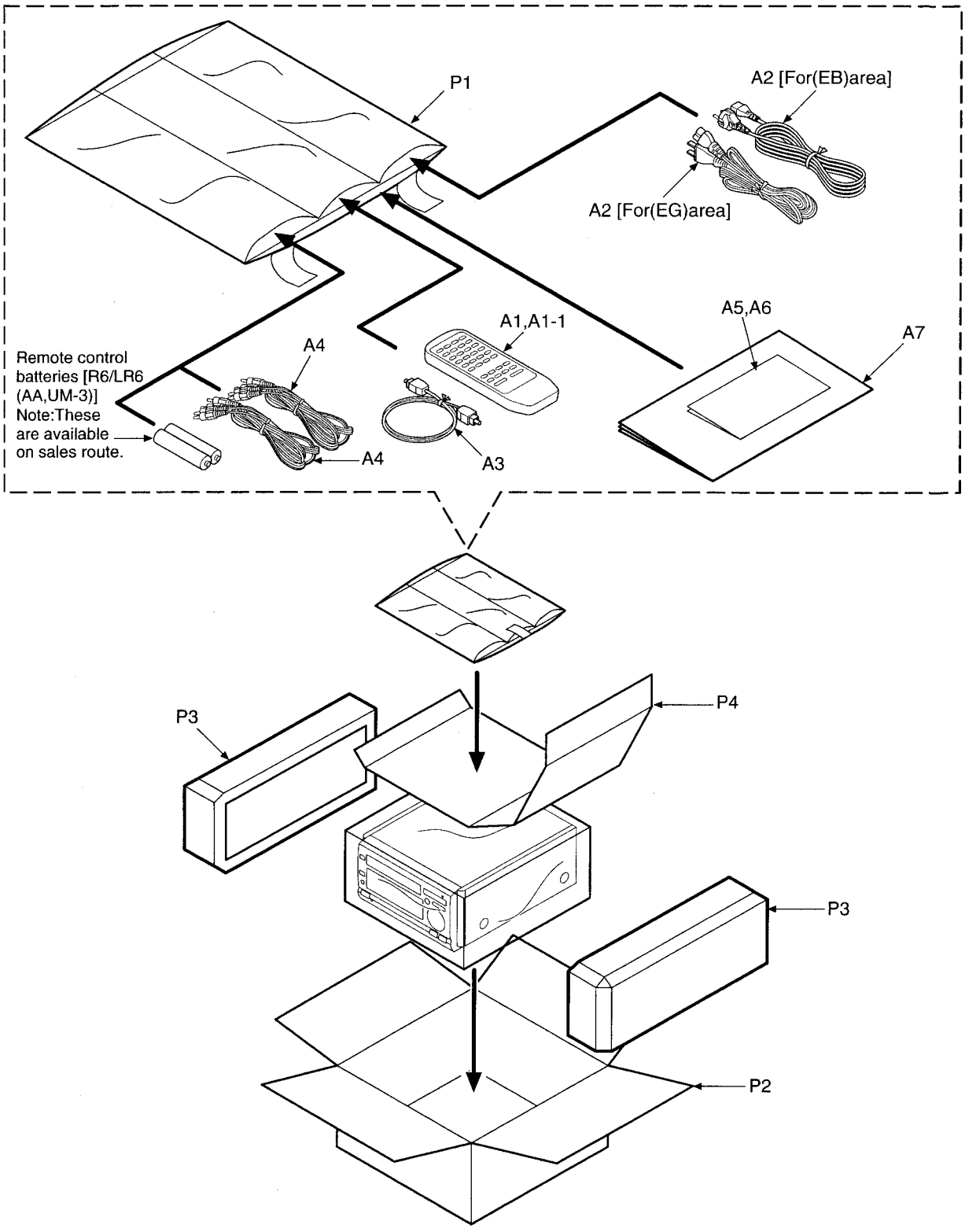
Note: When changing loading mechanism parts, apply the specified grease to the areas marked "××" as shown in the drawing.

Ref.no.	Part No.
❶	RFKXPG641



Note: We do not supply those items of parts marked ✻.

20 Packaging



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ORDER No. AD0001001P8

Parts Change Notice

√ V24550 # 1025044
V24696 # 2027061
V23844 # 1039131

Model No. SJ-HD501 [EB, EG] / SJ-HD505 [E, GH] / SJ-MD100 [E, EB, EG]

Please revise the original parts list in the Service Manual to conform to the change(s) shown below. If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change *The circled item indicates the reason. If no marking, see the Notes in the bottom column.

1.	Improve performance
(2.)	Change of material or dimension
3.	To meet approved specification
4.	Standardization
5.	Addition
6.	Deletion
7.	Correction
8.	Other

Interchangeability Code **The circled item indicates the reason. If no marking, see the Notes in the bottom column.

	Parts		Unit Production	
A	Original	→	Early	Original or new parts may be used in either early or late production units. Use original parts until the supply is exhausted, then stock new parts.
	New	→	Late	
B	Original	→	Early	Original parts may be used in early production units only. New parts may be used in either or late production units. Use original parts where possible, then stock new parts.
	New	→	Late	
(C)	Original	→	Early	New parts are to be used in both early and late production units. Stock new parts only.
	New	→	Late	
D	Original	→	Early	Original parts must be used in early production units. New parts must be used in late production units only. Stock both original and new parts.
	New	→	Late	
E	Other			

Part Number Information

Model No.	Ref. No.	Original Part No.	New Part No.	Notes(*,**)	Part Name & Description	Q'ty	Remarks
	IC3	MN66616RA1	**MN66616RA4**	2, C	IC	1	
	IC3	MN66616RA2	**MN66616RA4**	2, C	IC	1	

Please file this parts change notice with your copy of the Service Manual for model No.

SJ-HD501	[EB, EG]	Order No. AD9907180(2
SJ-HD505	[E]	Order No. AD9905119(2
	[GH]	Order No. AD9909218(3
SJ-MD100	[E, EB, EG]	Order No. MB9902001(2

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